

EcoAtlas and CRAM: Online Resource Management Support Tools

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San Francisco Estuary Institute

NWQM Conference
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Wetlands & Watersheds Support Tools



SFEI, on behalf of the Wetland Monitoring Workgroup is releasing a series of technology tools to help with aquatic resource protection and management.

"These new online tools will empower Californians to access information about

the value and health of their wetlands," said U.S. Environmental Protection Agency Regional Administrator Jared Blumenfeld. "The release of the Wetlands Portal and EcoAtlas represents a multi-agency collaborative effort to inform the public and support better aquatic resource management."

These versatile, statewide tools will help a range of users: the public can learn about wetlands and wetlands protection, resource managers can find information needed to make key decisions, and scientists will have a new critical resource for studying wetland ecosystems. Furthermore, the new tools mutually enhance one another.



Lets users integrate data and information about aquatic resources and the factors that influence them. More below...



Information for the public about wetland health. More below...

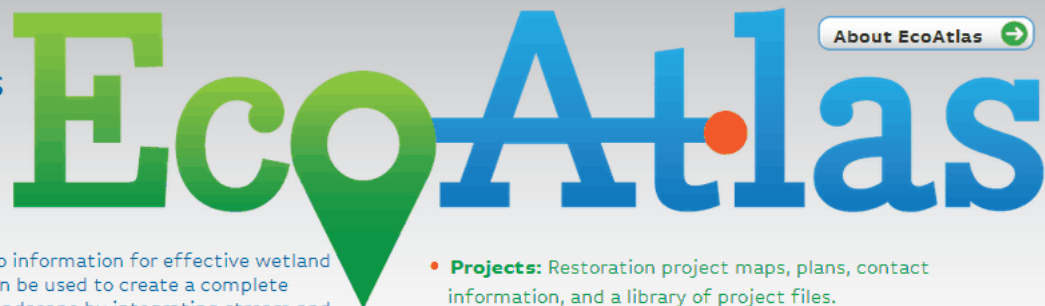


Revamped website for the California Rapid Assessment method for wetland health Data entry, training information, and field books. More below...



A new base map of streams, rivers, and wetlands throughout the state. More below...

Where are the
aquatic resources
and how are
they doing?

[About EcoAtlas](#) →

California EcoAtlas provides access to information for effective wetland management. The maps and tools can be used to create a complete picture of aquatic resources in the landscape by integrating stream and wetland maps, restoration information, and monitoring results with land use, transportation, and other information important to the state's wetlands.

- **Projects:** Restoration project maps, plans, contact information, and a library of project files.
- **Resource Extent:** Maps of aquatic resource extent and special habitats of interest.
- **Condition:** Assessment and monitoring data including relevant water quality and California Rapid Assessment Method (CRAM) data.

Visualize condition and extent
of California's aquatic resources

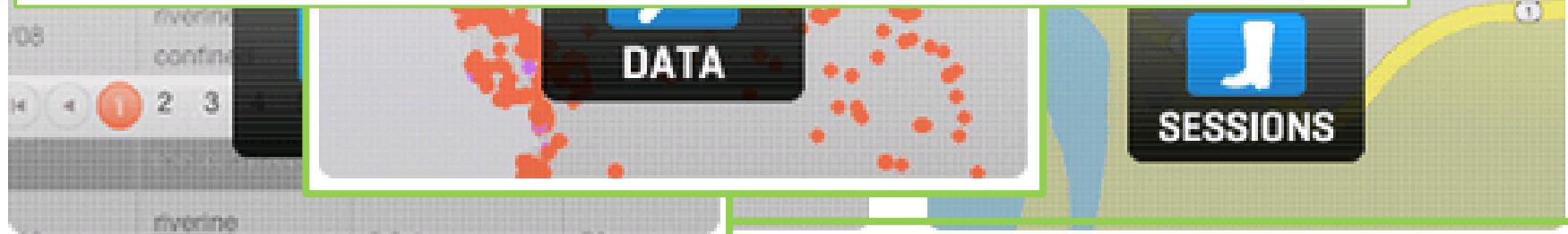


- 📍 📊 Modoc
- 📍 📊 South Coast
- 📍 📊 Sierra
- 📍 📊 Sacramento Valley
- 📍 📊 Mojave
- 📍 📊 San Joaquin Valley
- 📍 📊 Colorado Desert

California Rapid Assessment Method



Standard method for assessing
wetland condition



EcoAtlas provides landscape context to aquatic resource extent and condition information. The Landscape Profile tool generates dynamic summaries of aquatic resource information.



The California Wetland Monitoring Workgroup works to improve monitoring and assessment of wetland and riparian resources through statewide monitoring and increased cooperation.

www.cramwetlands.org

California Aquatic Resources Inventory (CARI)

[ABOUT](#)[CONTACT](#)[DATA](#)[REGIONS ▾](#)[Layers ▾](#)[Legends ▾](#)[Basemap ▾](#)[Overlays ▾](#)[Tools](#)

Existing Aquatic Resources - CARI

Standardized statewide map of wetlands, streams and riparian areas

☒ Wetlands

Transparency



ARIZONA

DATA

CRAM

CARI

CEDEN

OTHER WEB SITES

WEB SERVICES

EcoAtlas

SYNTHESES

LANDSCAPE
PROFILES

Water
Quality

PROJECT
TRACKING

401/WDR

NCCP*

LAKE AND
STREAMBED
ALTERATION
PROGRAM

NON-REGULATORY
RESTORATION
PROJECTS

PROJECTS

CIWQS*
and ECM

ONLINE
401

Key Features of EcoAtlas

- Interactive maps
- Custom tools
- Project tracking tools

Interactive Maps

- Customize map views
- Data layers:
 - Aquatic resources
 - Wetland restoration projects
 - Wetland condition
 - Water and sediment toxicity

Bay/Delta : [Map](#) | [Projects](#) | [Summaries](#)

Layers ▾

[Legends ▾](#)

[Basemap ▾](#)

[Overlays ▾](#)

Project Information

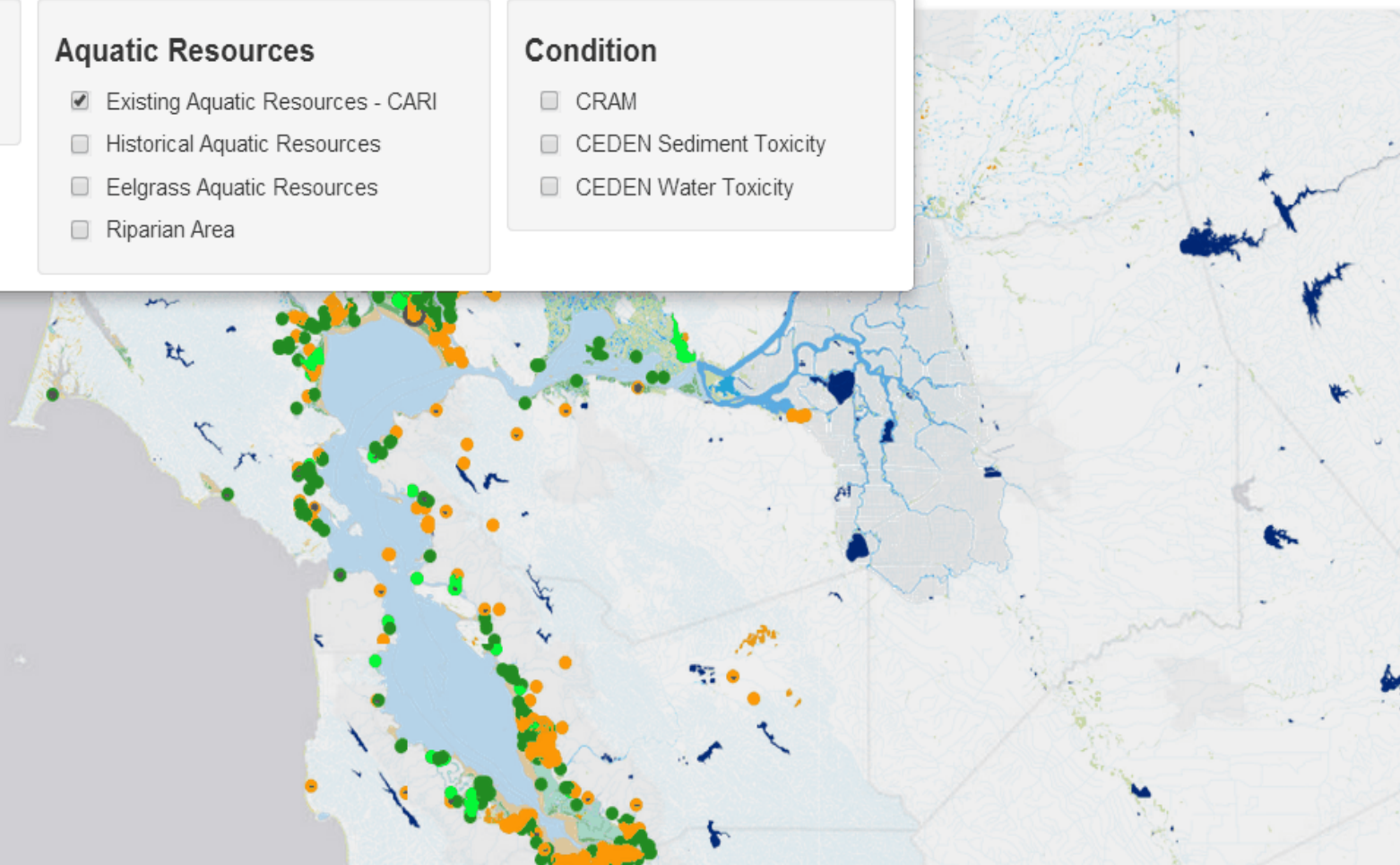
☒ Wetland Projects

Aquatic Resources

- ☒ Existing Aquatic Resources - CARI
- ☐ Historical Aquatic Resources
- ☐ Eelgrass Aquatic Resources
- ☐ Riparian Area

Condition

- ☐ CRAM
- ☐ CEDEN Sediment Toxicity
- ☐ CEDEN Water Toxicity



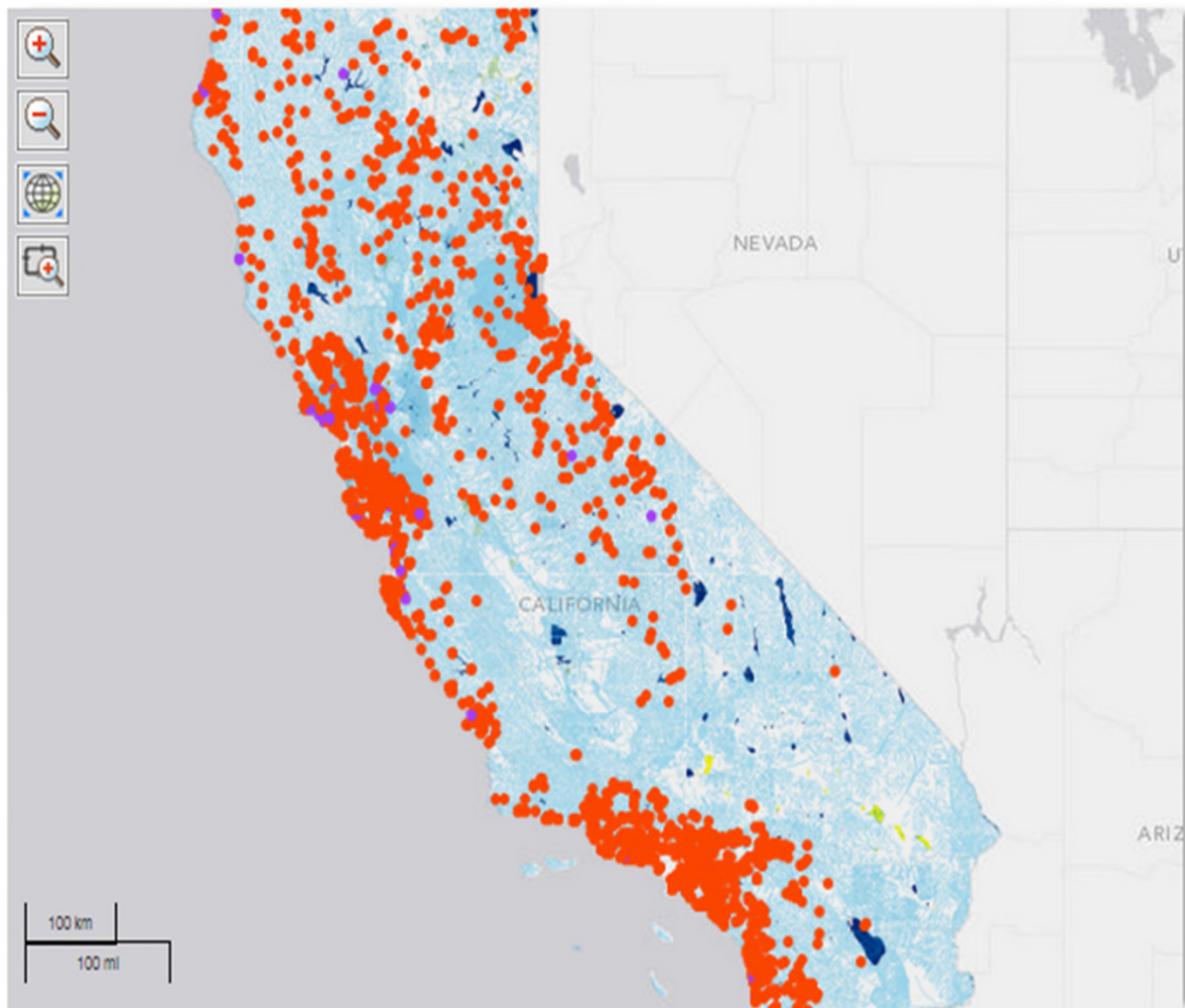
Layers ▾

Legends ▾

Basemap ▾

Overlays ▾

Tools

**Wetland Condition (CRAM)**

CRAM AA Locator ▾

☐ Limit above list to AAs currently visible in map window

Filter AAs by:

Wetland Type ▾

AA Category ▾

Filter by Index Score

25 - 100



25

100

Filter by Assessment Year

2005 - 2014



2005

2014

Clear

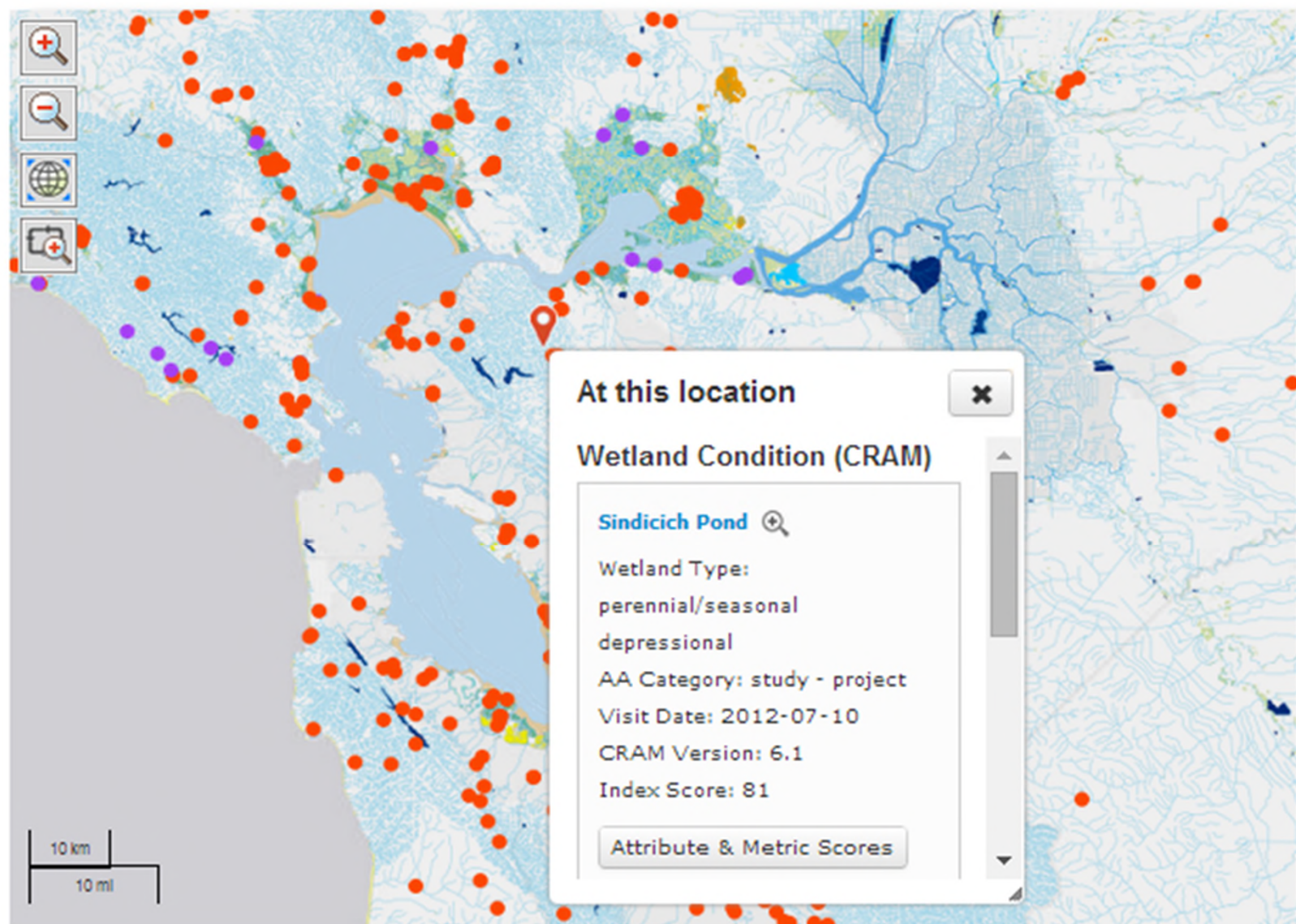
Download All Public CRAM Data ▾

Layers ▾

Legends ▾

Basemap ▾

Overlays ▾

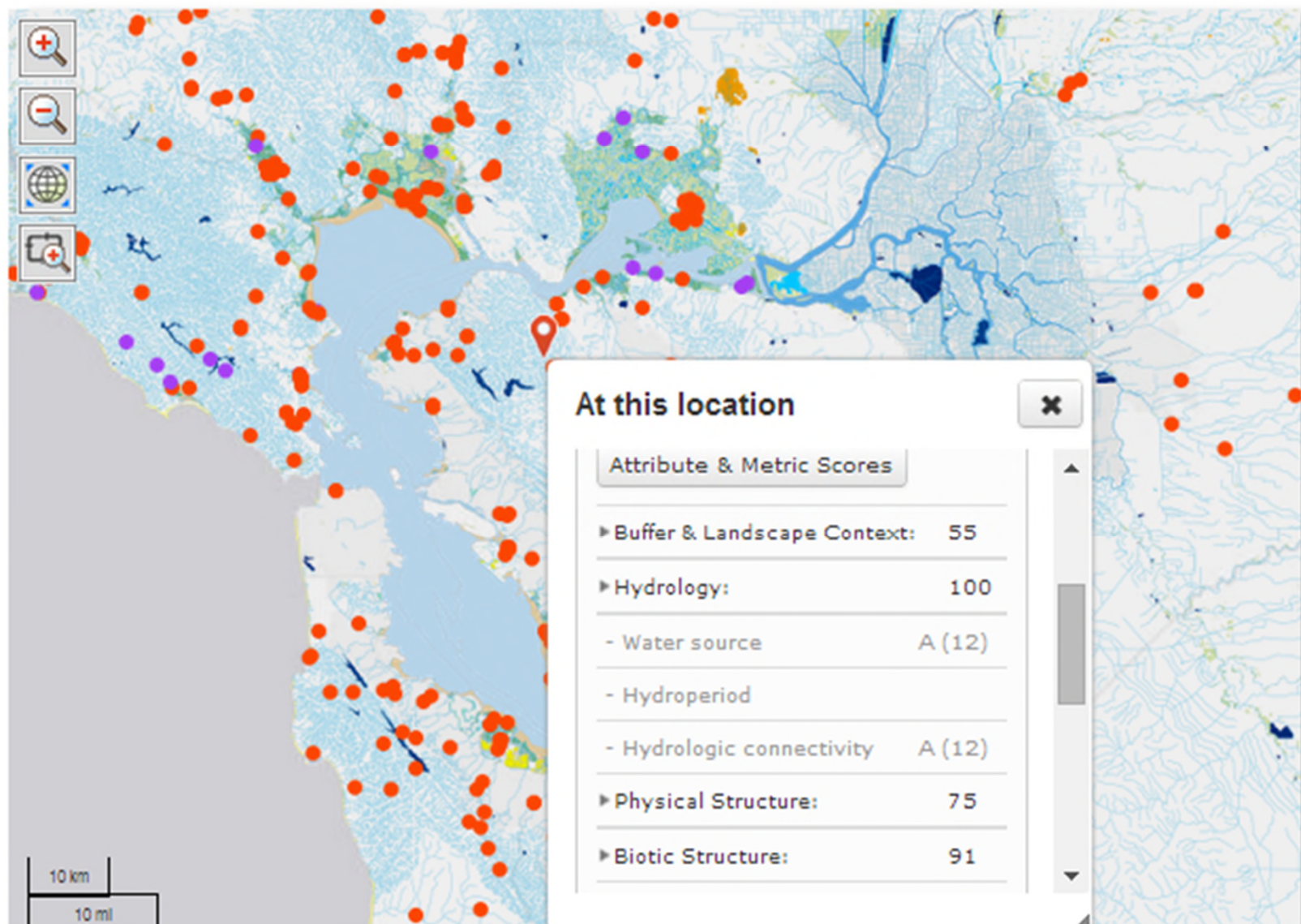


Layers ▾

Legends ▾

Basemap ▾

Overlays ▾

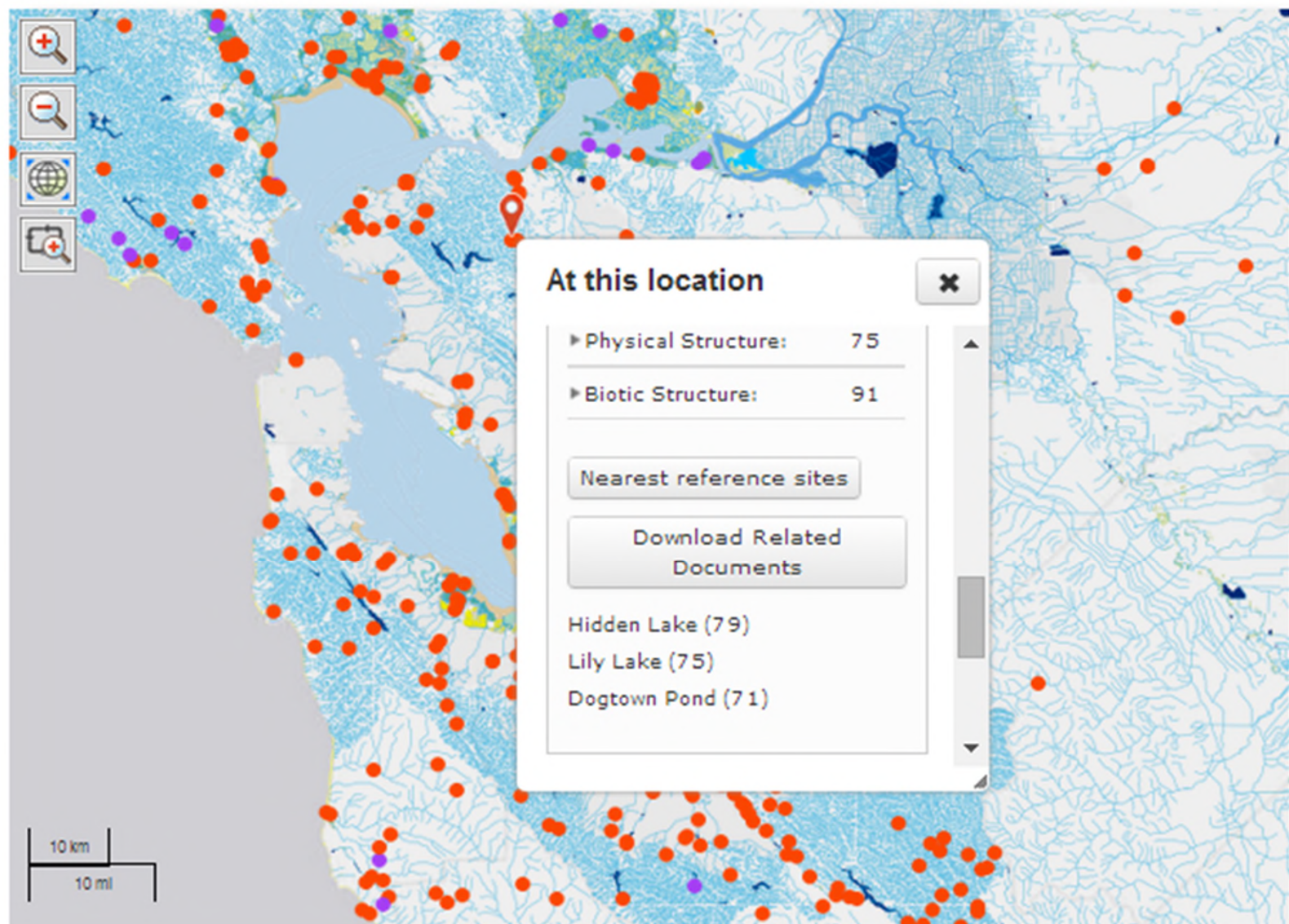


Layers ▾

Legends ▾

Basemap ▾

Overlays ▾



Layers ▾

Legends ▾

Basemap ▾

Overlays ▾

- ☐ Congressional Districts (pre-2012)
- ☒ Counties
- ☐ Historical Ecology Project Boundaries
- ☐ Hydrologic Regions (HUC8)
- ☐ Ecoregions
- ☐ USACE Districts
- ☐ Water Board Regions
- ☐ Place Names
- ☐ Streets / Transportation

Different lenses through which
to see the data



Our Data



CARI



CEDEN



CNDDDB



CRAM



Census



Ecoregions

Eelgrass Aquatic
ResourcesHistoric Aquatic
ResourcesNational Land Cover
Dataset

Riparian Area



USGS StreamStats



Wetland Projects



California Natural Diversity Database (CNDDDB)

Data are available at the 7.5' Quadrangle and County level only.

The Landscape Profile tool uses publicly available California Natural Diversity Database data on the status and locations of rare plants and animals in California. All special status species from quadrangles that overlap with the defined landscape are reported, although the species reported may not necessarily inhabit the area of overlap. CNDDDB data are updated monthly and data reported represent what was available at the last update.

CNDDDB is a collection of positive sighting data that constitute the most complete set of information available on the State's declining and/or vulnerable taxa. The data sources for CNDDDB are comprised of one or more of the following: museum and herbarium specimens, published literature sources with location data, field survey data submitted to CNDDDB, and data from unpublished "gray" literature such as contracted reports. CNDDDB is not an exhaustive and comprehensive inventory of all rare species and natural communities statewide. CNDDDB concentrates its work on areas with active Natural Community Conservation Plans or Habitat Conservation Plans, as well as high priority areas identified by the California Department of Fish and Wildlife and other biologists. No inference can be made regarding lands that have not been surveyed, and it is never appropriate to conclude that an area contains no rare taxa based on the CNDDDB data.

For more information on CNDDDB and to download the data:
<http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp>.

Last update: Monthly

Custom Tools

- Landscape Profile tool & report
- Query/download data
 - Wetland restoration projects
 - Wetland condition (CRAM)

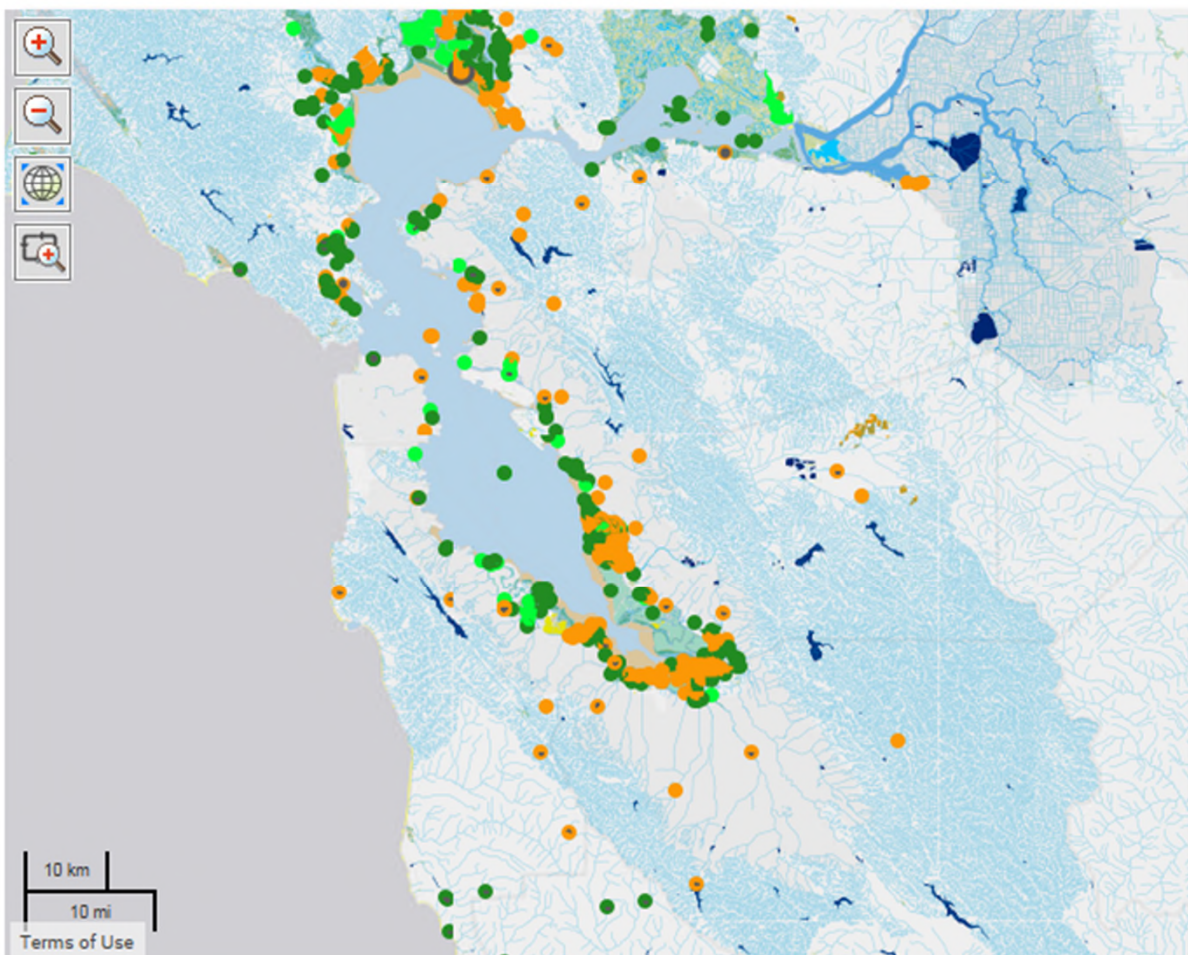
Layers ▾

Legends ▾

Basemap ▾

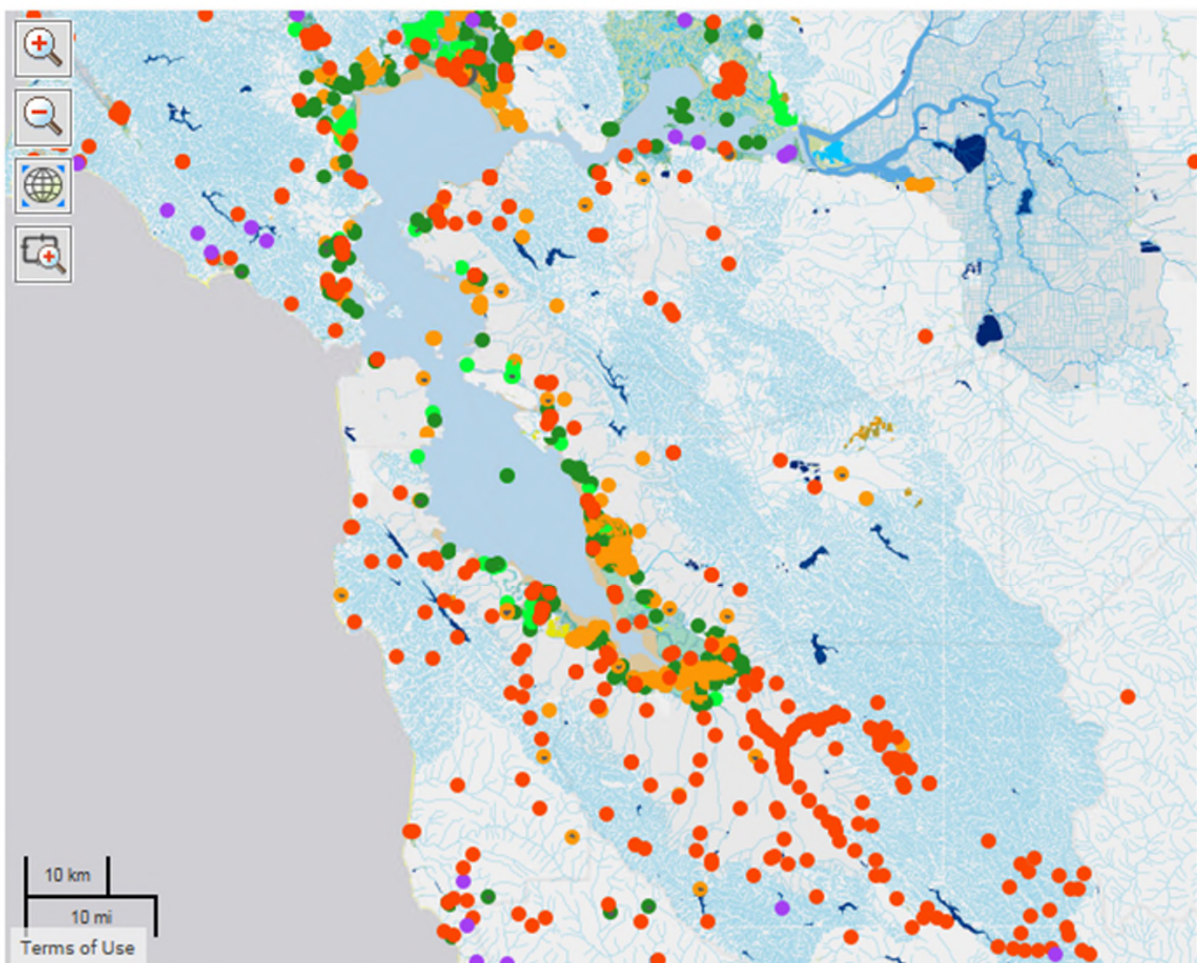
Overlays ▾

Tools



< Landscape Profiles


[Auto-delineated basin by StreamStats](#)[Draw your area of interest](#)[Draw a Polygon](#)[Pre-defined areas](#)



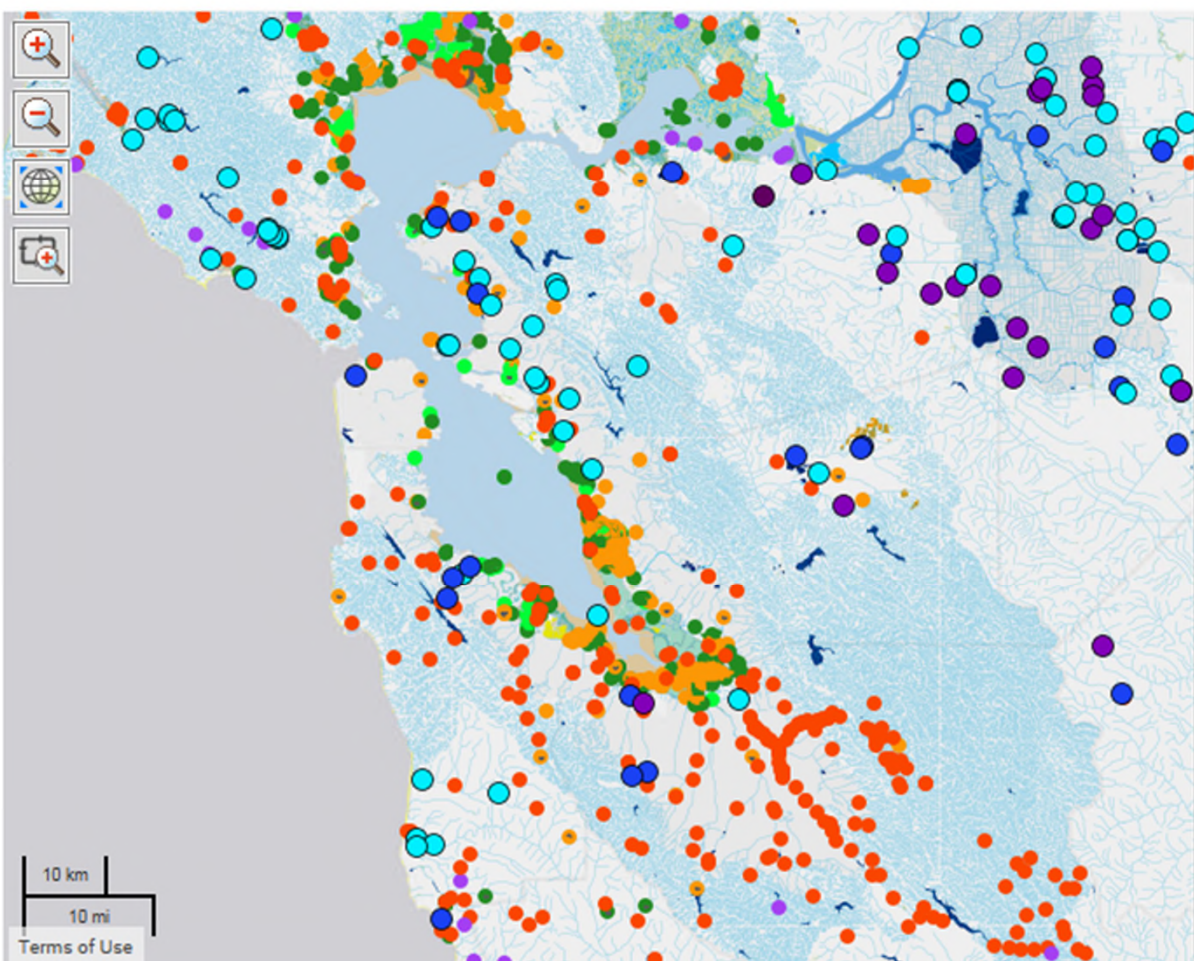
< Landscape Profiles

[Auto-delineated basin by StreamStats](#)

[Draw your area of interest](#)

 Draw a Polygon

[Pre-defined areas](#)



< Landscape Profiles

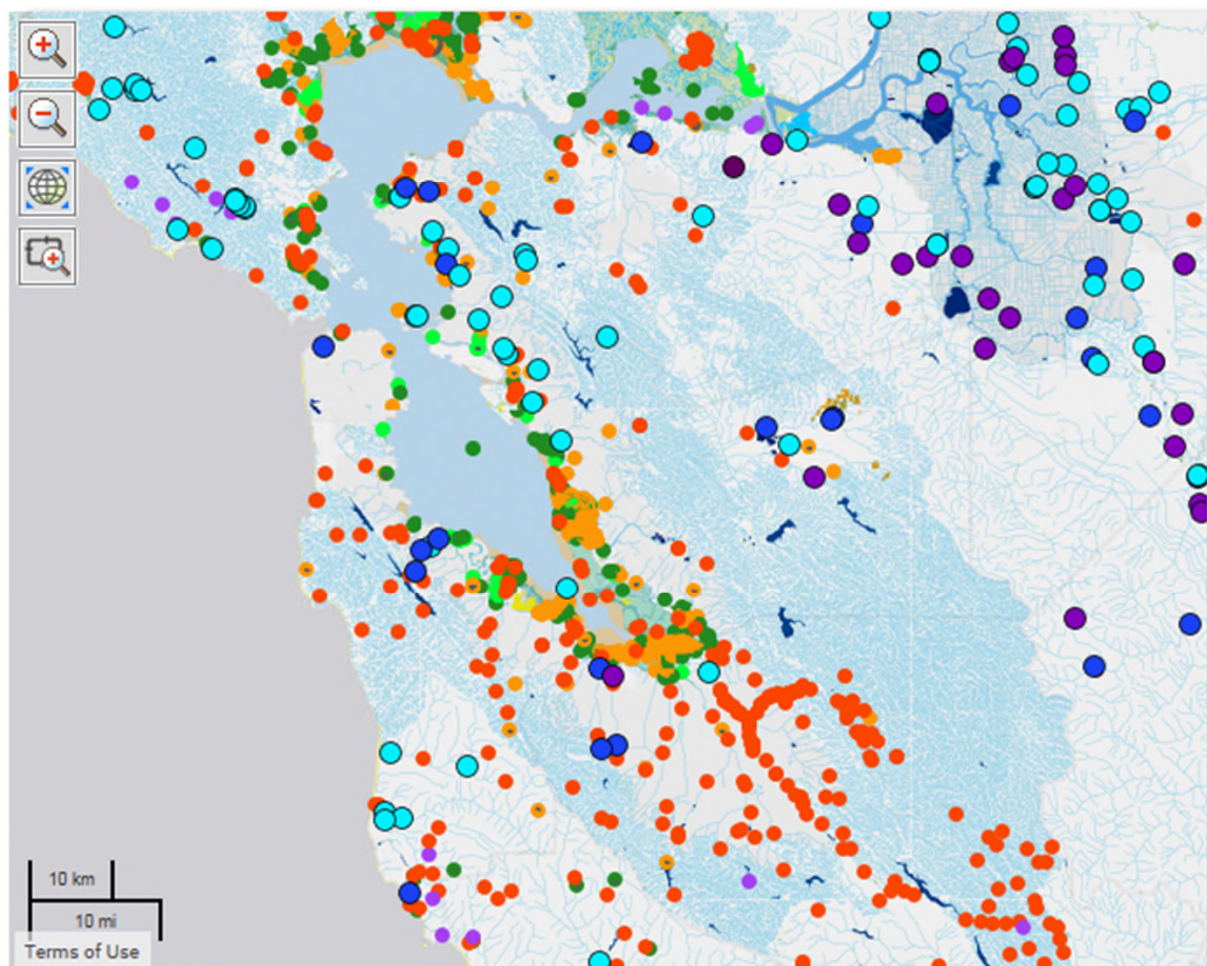
Auto-delineated basin by StreamStats

Draw your area of interest



Draw a Polygon

Pre-defined areas



< Landscape Profiles

[Auto-delineated basin by StreamStats](#)

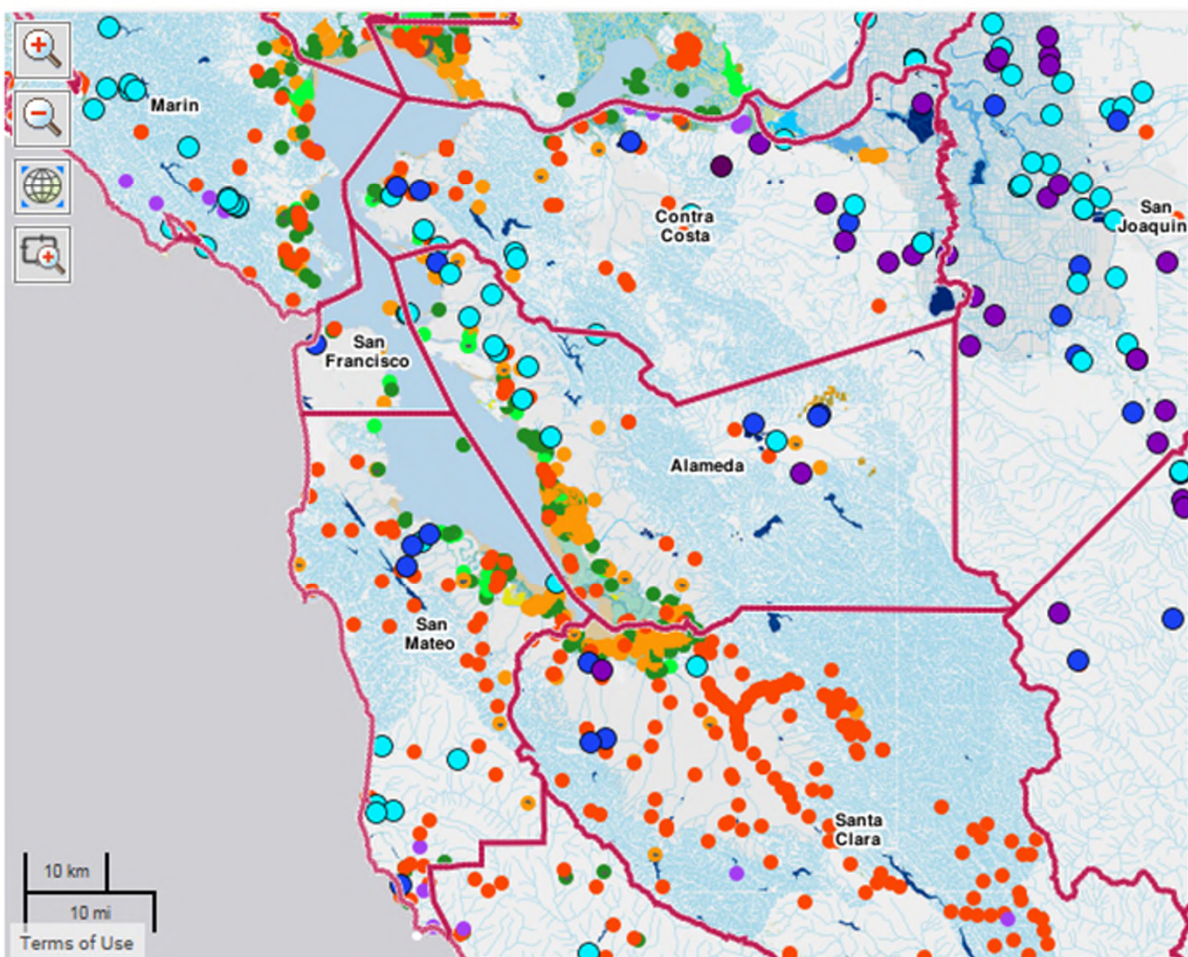
Delineate Basins using USGS Streamstats Web Service?

[How To](#)

Clicking **No** will clear existing basins.

[Draw your area of interest](#)

[Pre-defined areas](#)



< Landscape Profiles

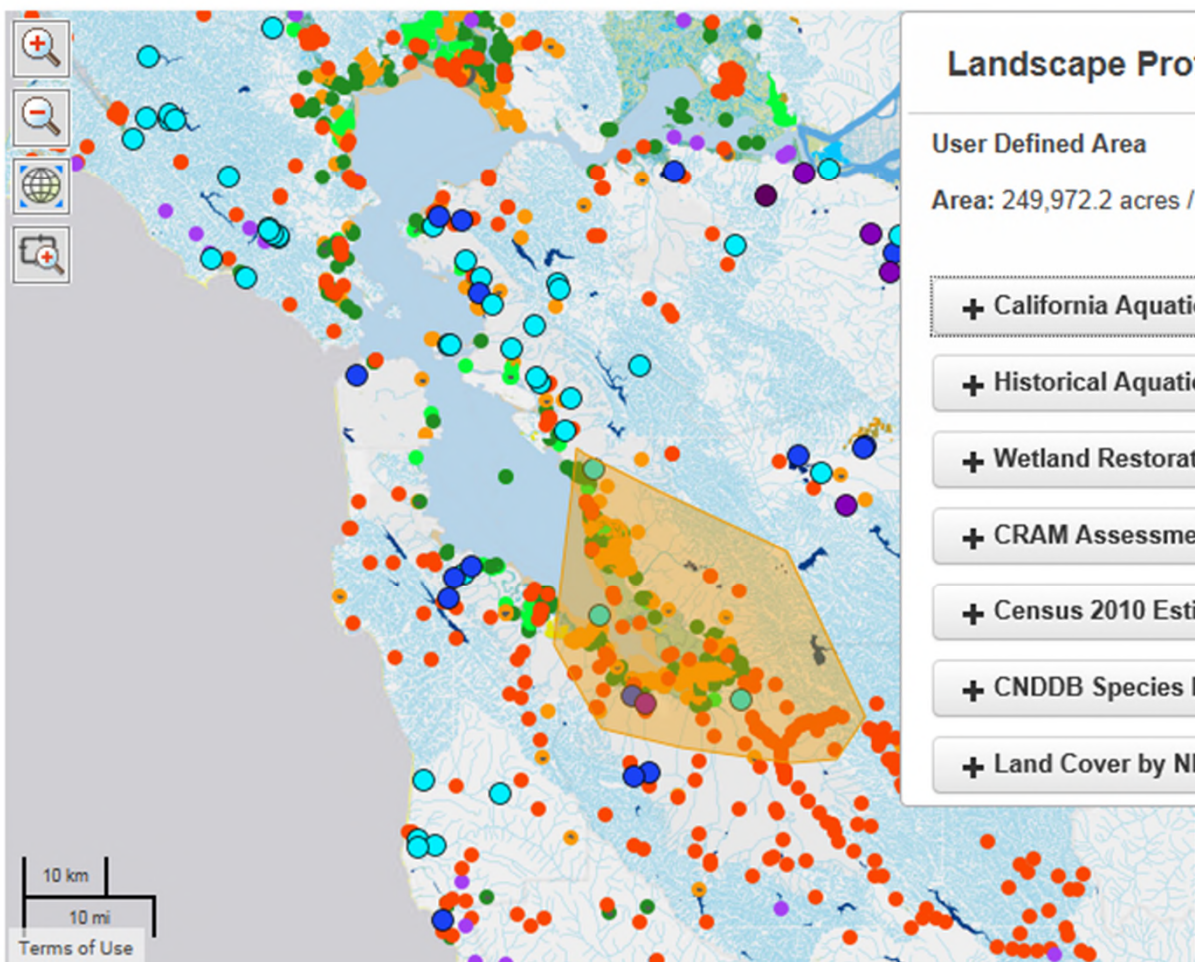
[Auto-delineated basin by StreamStats](#)

[Draw your area of interest](#)

[Pre-defined areas](#)

- ☐ None
- ☐ Congressional Districts (pre-2012)
- ☒ Counties
- ☐ Hydrologic Regions (HUC8)

Click on a region on the map to get its landscape profile.



Landscape Profile

User Defined Area

Print Report

Area: 249,972.2 acres / 390.58 sq mi

+ California Aquatic Resource Inventory

+ Historical Aquatic Resources

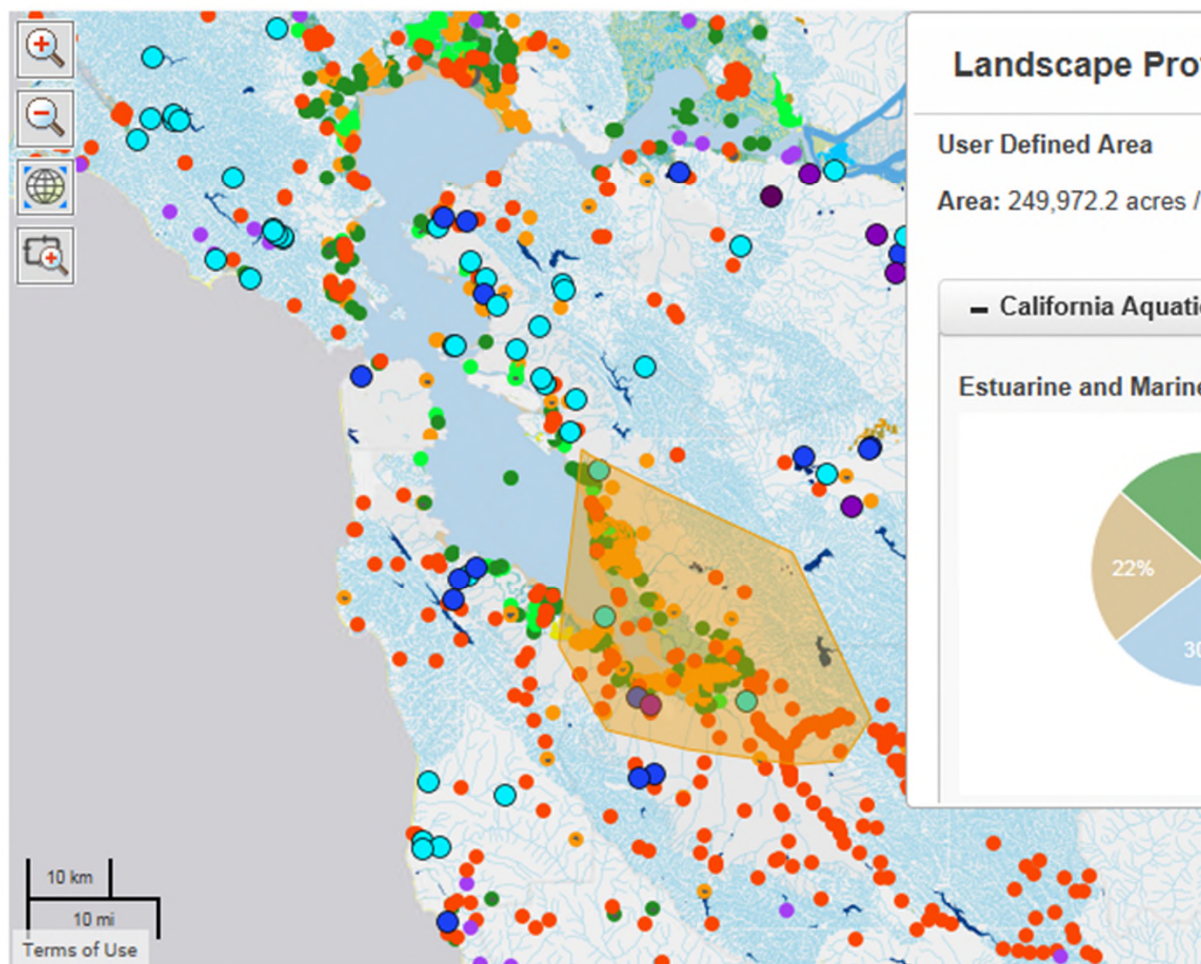
+ Wetland Restoration Projects (55)

+ CRAM Assessments (80)

+ Census 2010 Estimates

+ CNDDDB Species Information

+ Land Cover by NLCD 2006 Category



Landscape Profile

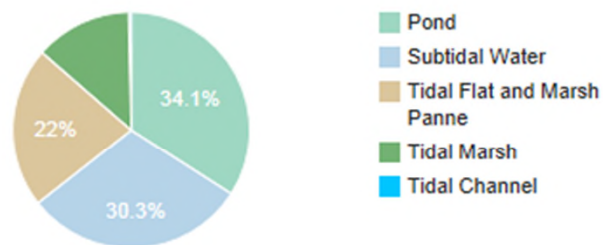
User Defined Area

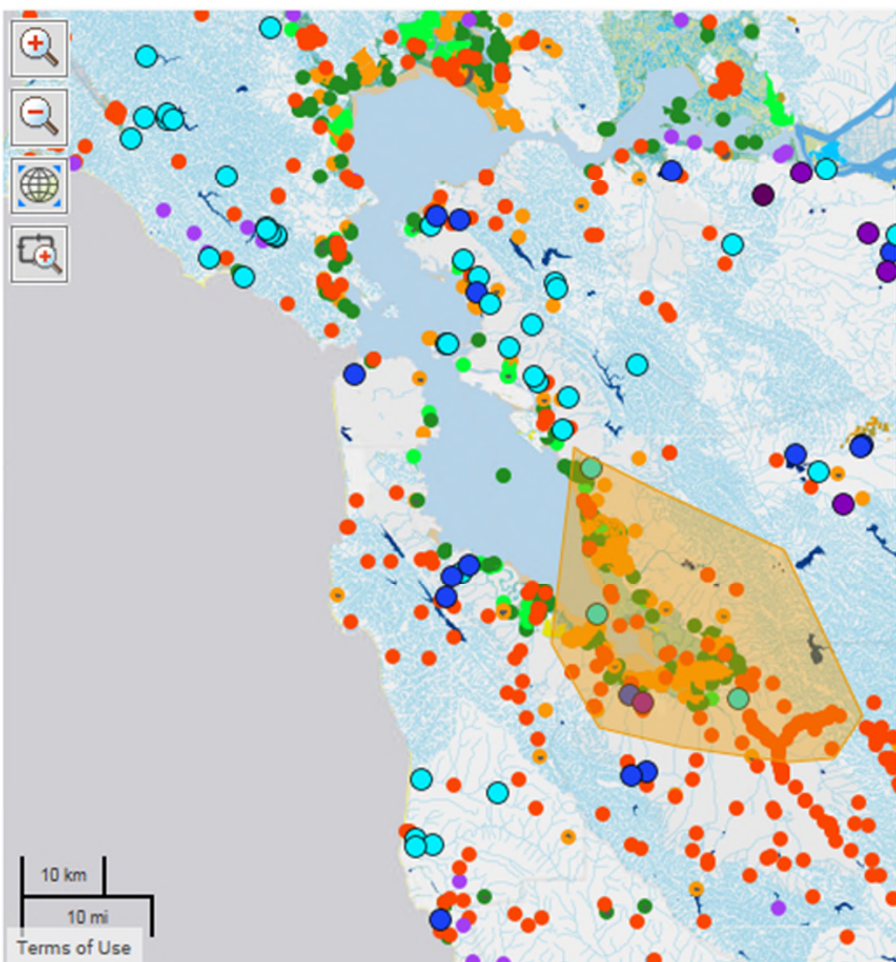
Print Report

Area: 249,972.2 acres / 390.58 sq mi

California Aquatic Resource Inventory

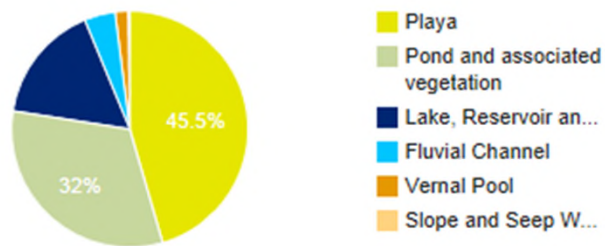
Estuarine and Marine Wetlands: 61,708 acres





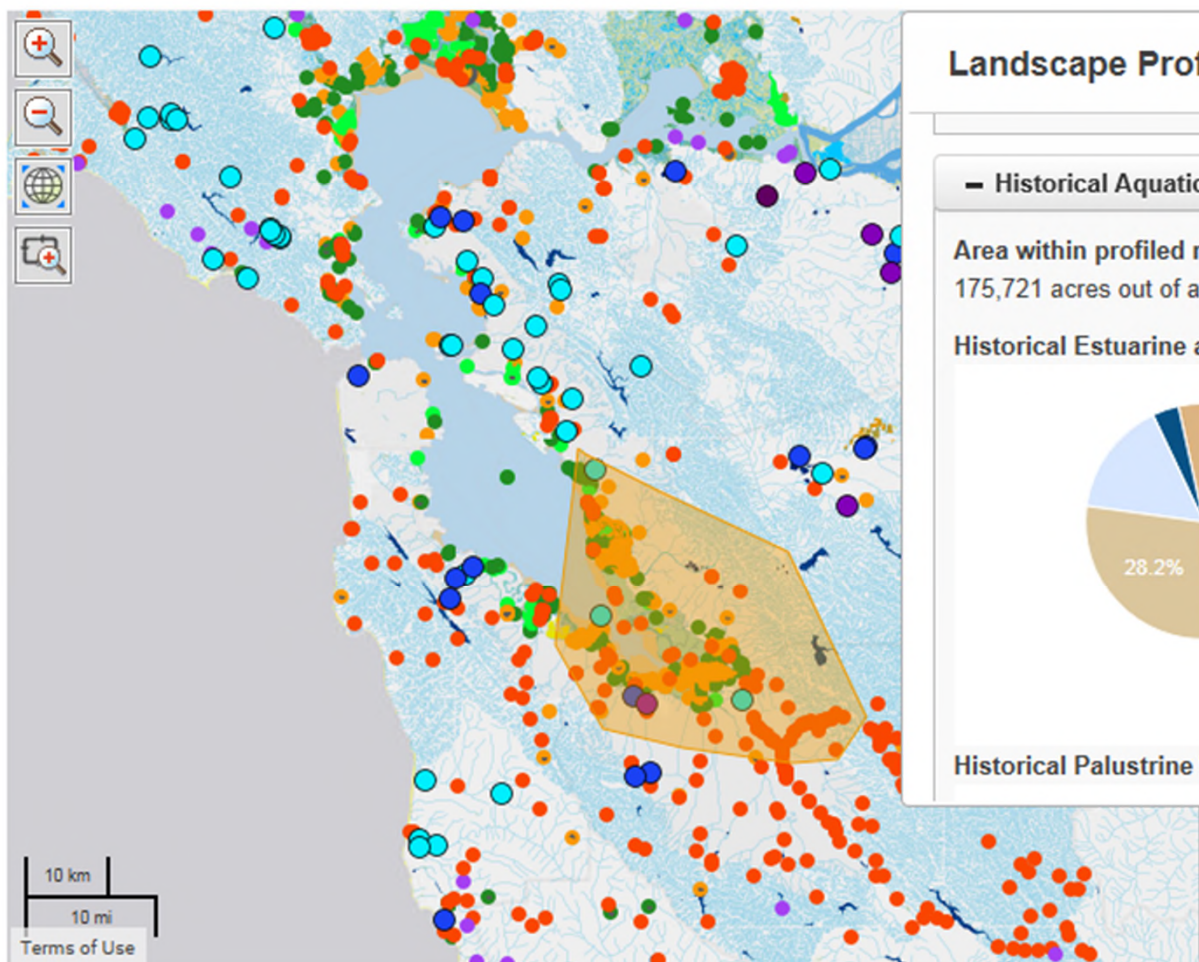
Landscape Profile

Palustrine and Riverine Wetlands: 9,296 acres



Drainage Features / Streams: 1,657 miles

- Fluvial: 1,132 miles
- Tidal: 524 miles

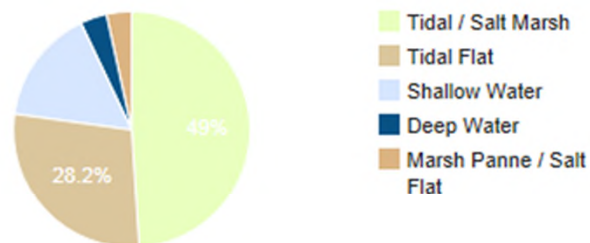


Landscape Profile

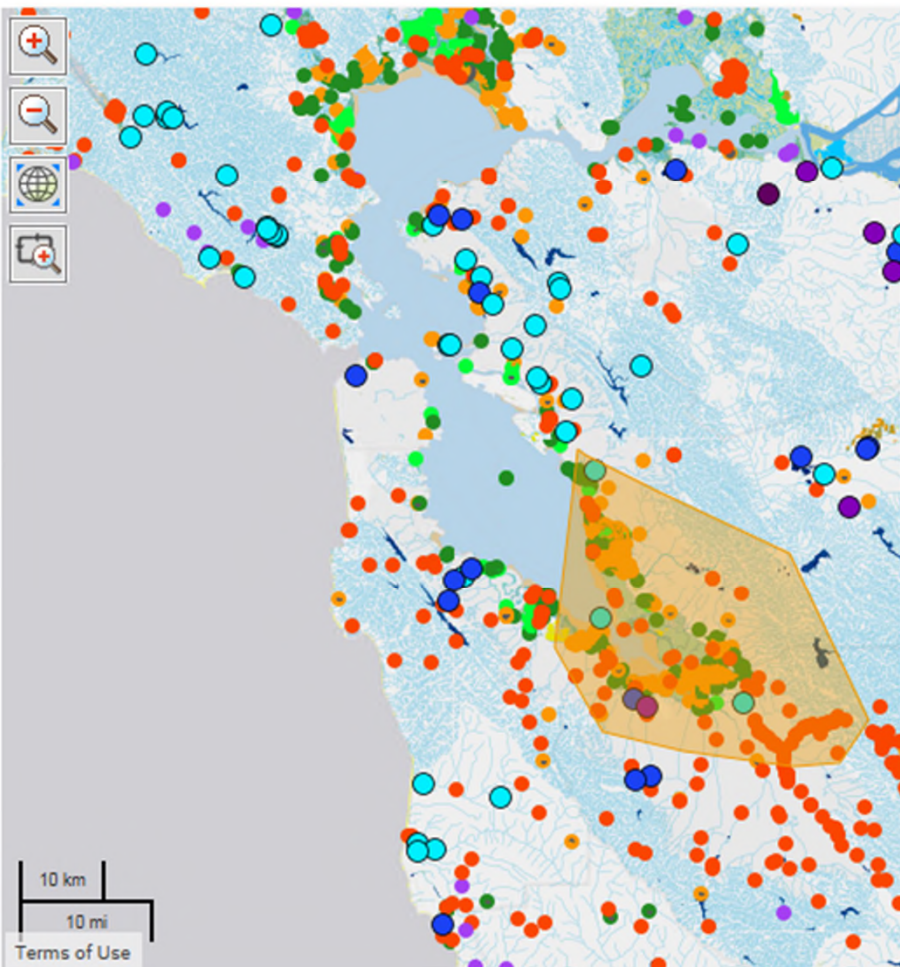
Historical Aquatic Resources

Area within profiled region for which there are historical data:
175,721 acres out of a total of 249,972.2 acres

Historical Estuarine and Marine Wetlands: 75,104 acres



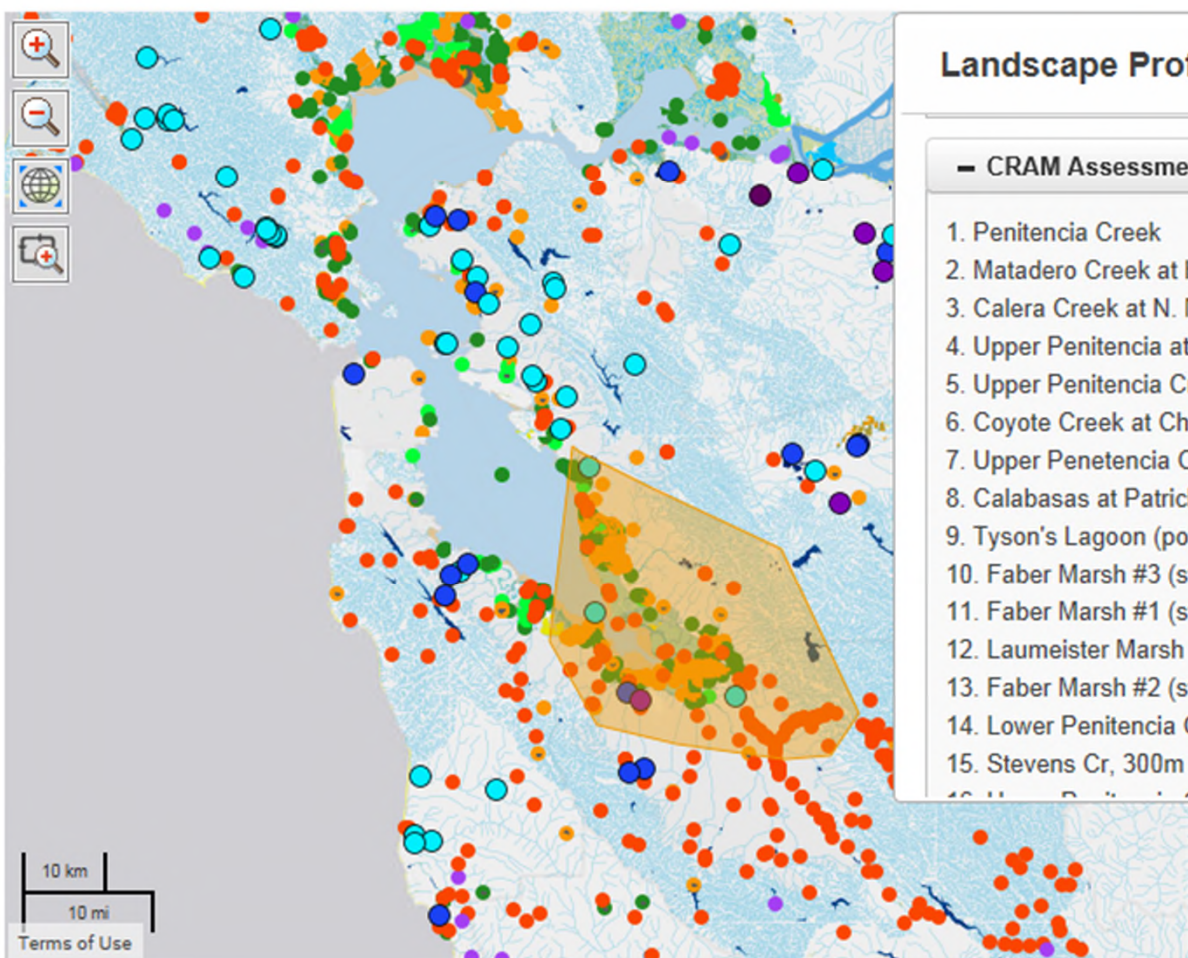
Historical Palustrine Wetlands and Terrestrial Features: 100,617 acres



Landscape Profile

— Wetland Restoration Projects (55)

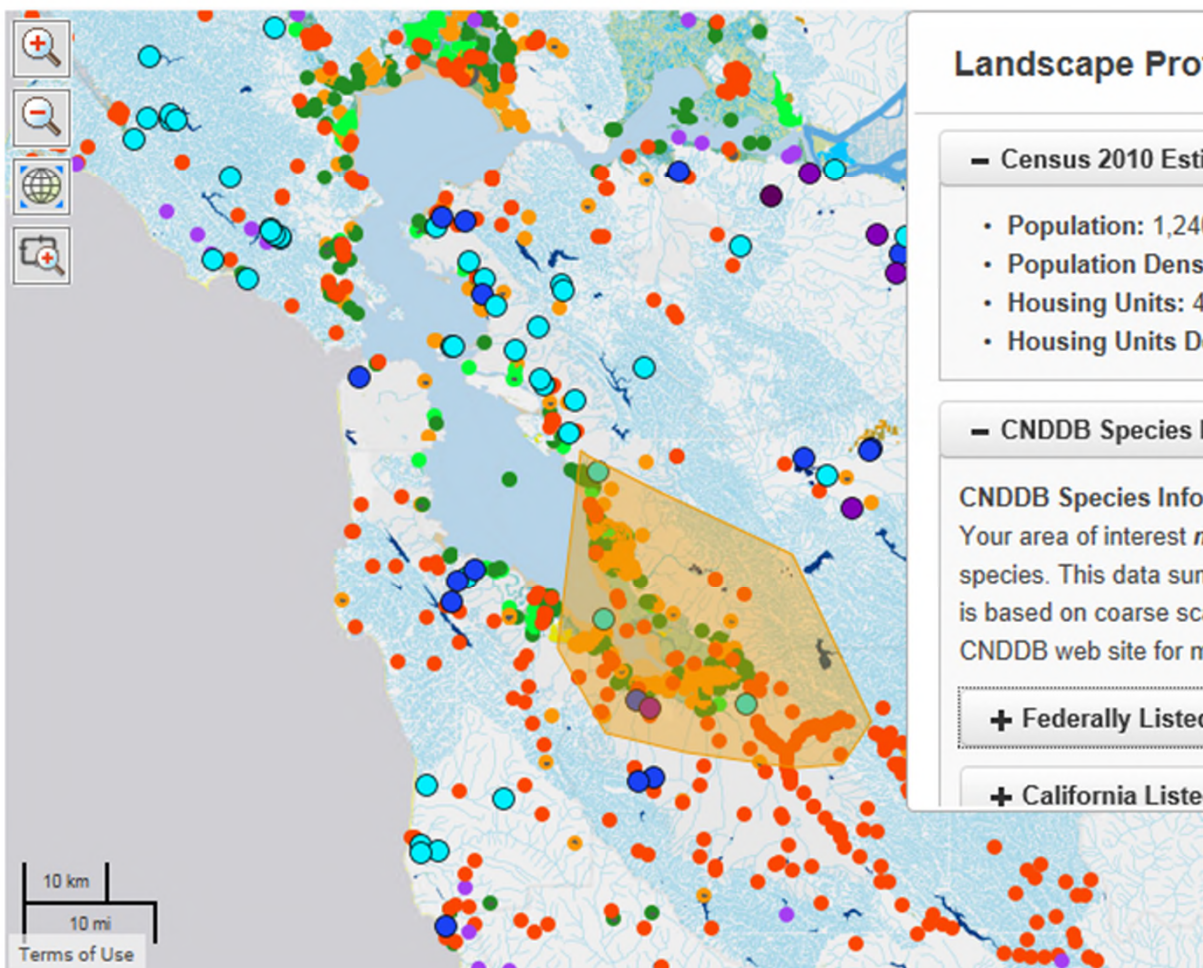
1. Pond 3
2. Pond A4
3. Ravenswood Triangle
4. San Leandro Shoreline Marshlands Enhancement Project
5. Plummer Creek Wetlands Restoration Mitigation Project
6. Pond A18
7. South Bay Salt Pond Restoration Project
8. Tasman Corridor Light Rail Transit Mitigation Project
9. Triangle Marsh, Refuge Entry
10. Triangle Marsh at Hayward Shoreline
11. Stevens Creek Tidal Marsh
12. Sunnyvale Baylands Park
13. Bayside Business Park - Phase II
14. Bayside Business Park - Phase I
15. W. ...



Landscape Profile

— CRAM Assessments (80)

1. Penitencia Creek
2. Matadero Creek at Hoover Park (study - project)
3. Calera Creek at N. Milpitas Blvd. (study - project)
4. Upper Penitencia at downstream of Piedmont (west) (study - project)
5. Upper Penitencia Creek at Live Oak Picnic - ARP (study - project)
6. Coyote Creek at Charcot (study - project)
7. Upper Penitencia Creek (study - ambient)
8. Calabazas at Patrick Henry (study - project)
9. Tyson's Lagoon (pond) (study - project)
10. Faber Marsh #3 (study - project)
11. Faber Marsh #1 (study - project)
12. Laumeister Marsh #1 (study - project)
13. Faber Marsh #2 (study - project)
14. Lower Penitencia Cr, 300m US of Marylinn Dr (study - project)
15. Stevens Cr, 300m DS of Moffett Blvd (study - project)



Landscape Profile

- Census 2010 Estimates

- Population: 1,240,019 persons
- Population Density: 3,240 persons per sq mile
- Housing Units: 425,256 units
- Housing Units Density: 1,111 units per sq mile

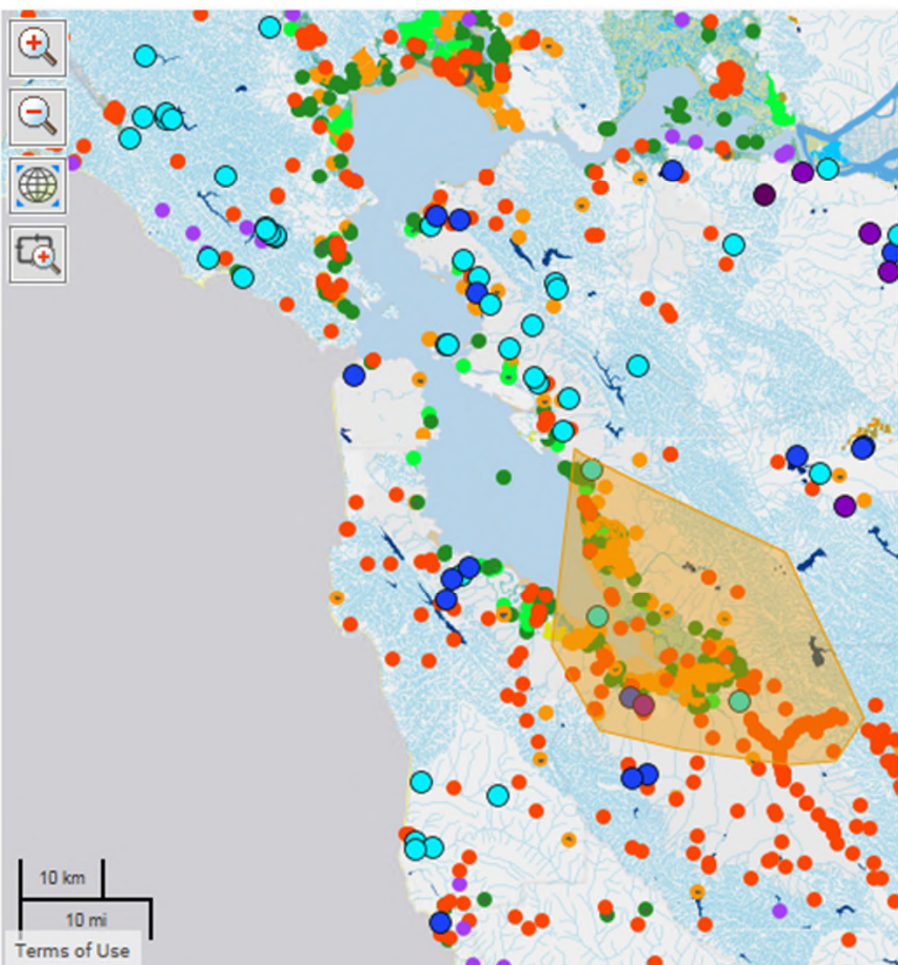
- CNDDDB Species Information

CNDDDB Species Information:

Your area of interest *may* contain the following state and federally listed species. This data summary is provided for informational purposes only and is based on coarse scale data (7.5 quad scale). You can refer to the CNDDDB web site for more information.

+ Federally Listed Species

+ California Listed Species

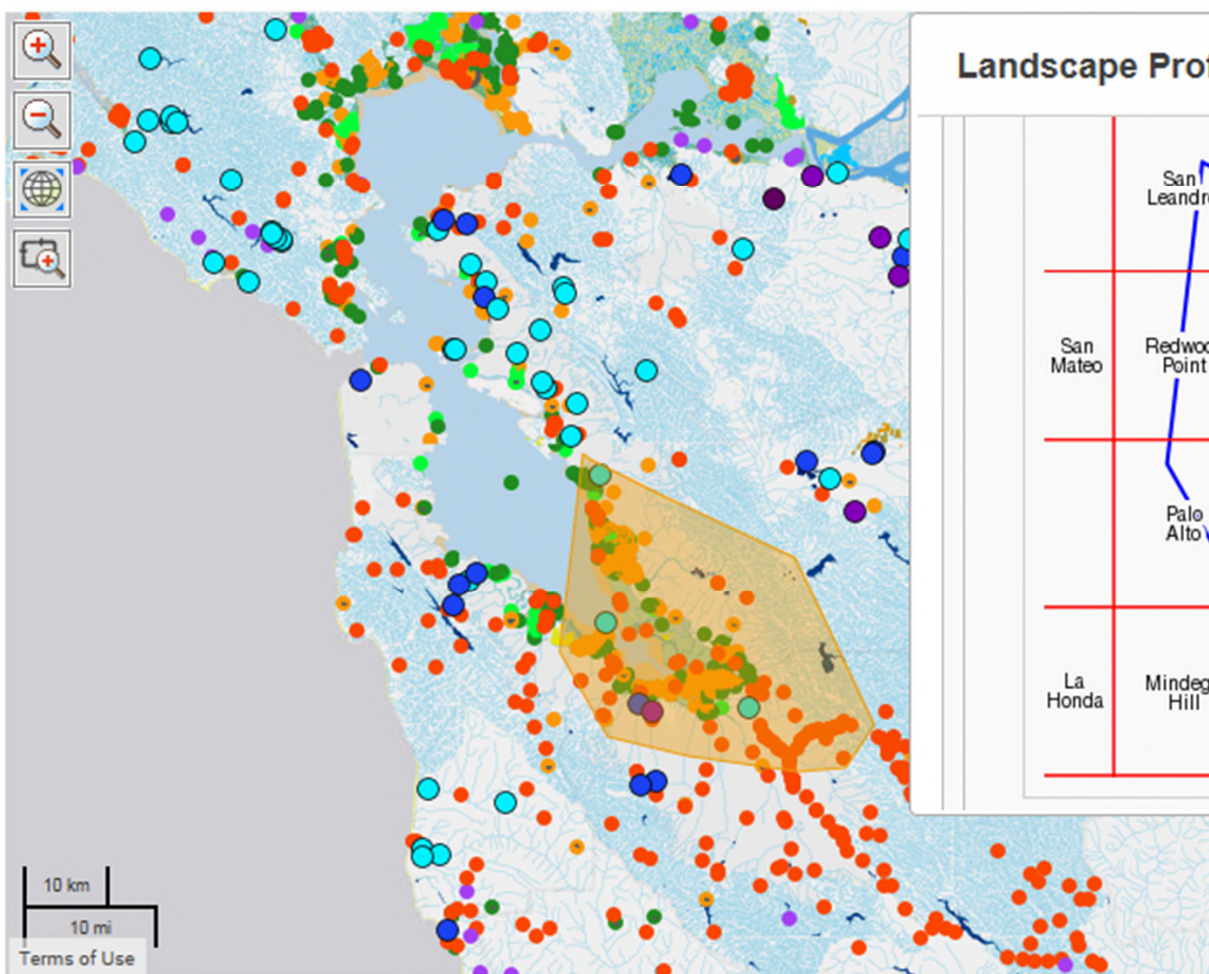


Landscape Profile

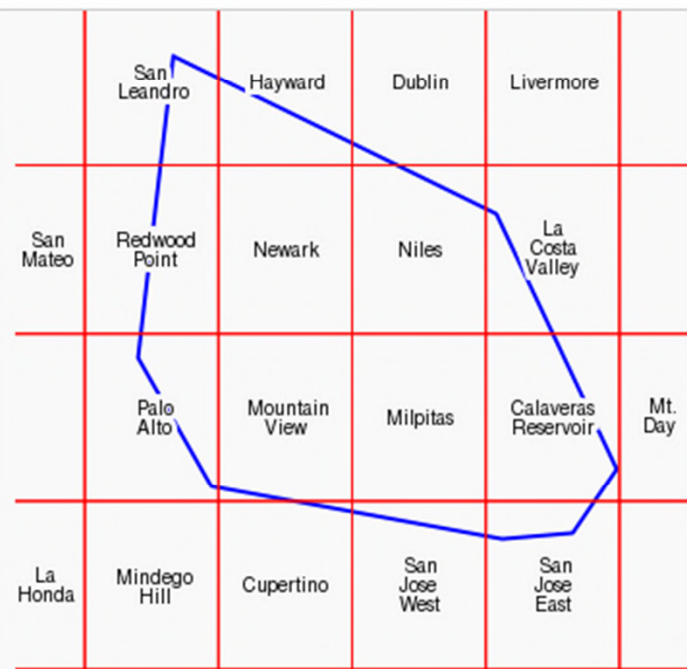
CNDDDB web site for more information.

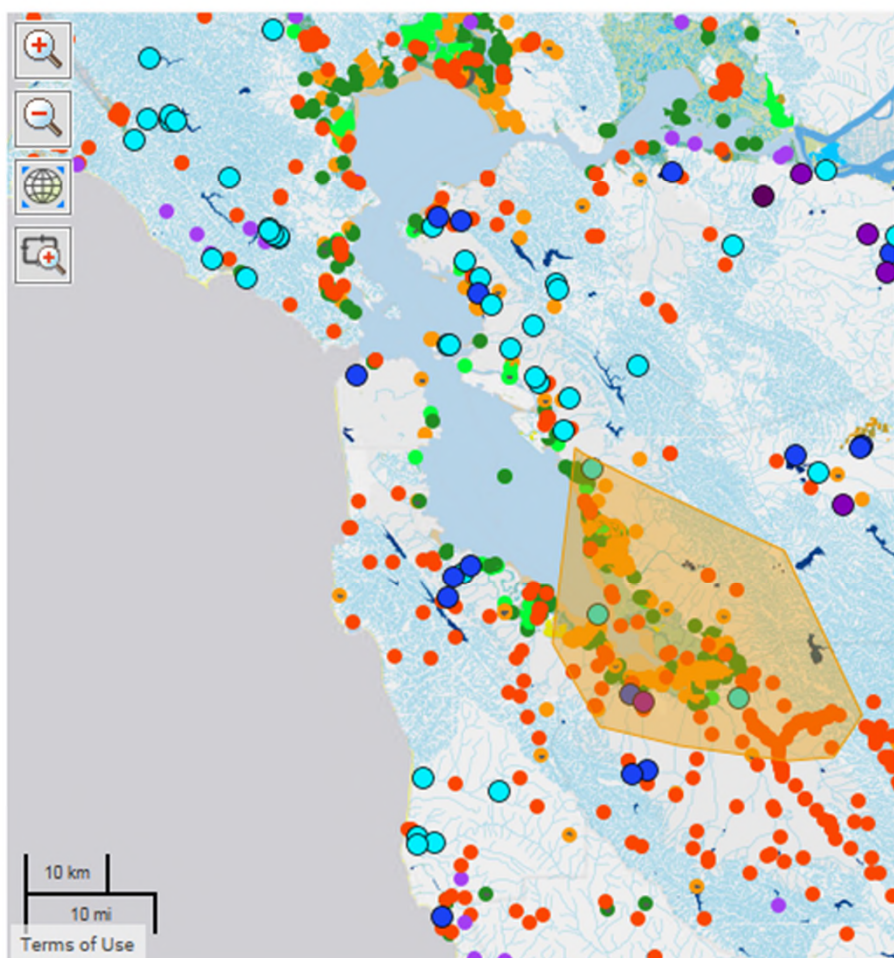
— Federally Listed Species

Common Name	Scientific Name	Taxa	Listing
California clapper rail	<i>Rallus longirostris obsoletus</i>	Vertebrate animal	Endangered
Quads: Mountain View, Redwood Point, Newark, Milpitas, Palo Alto, San Leandro			
western snowy plover	<i>Charadrius alexandrinus nivosus</i>	Vertebrate animal	Threatened
Quads: Mountain View, Redwood Point, Newark, Milpitas, Palo Alto, San Leandro			
California	<i>Sternula antillarum browni</i>	Vertebrate animal	Endangered



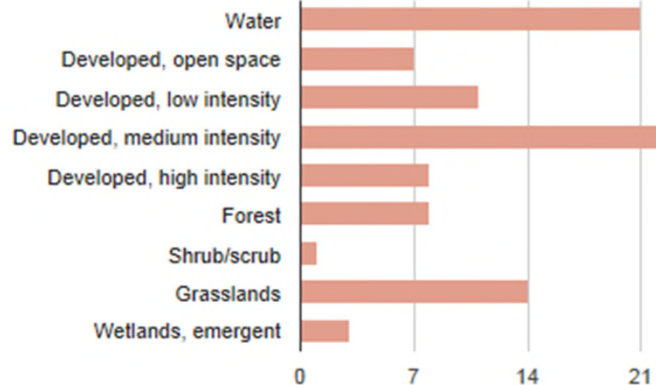
Landscape Profile





Landscape Profile

— Land Cover by NLCD 2006 Category



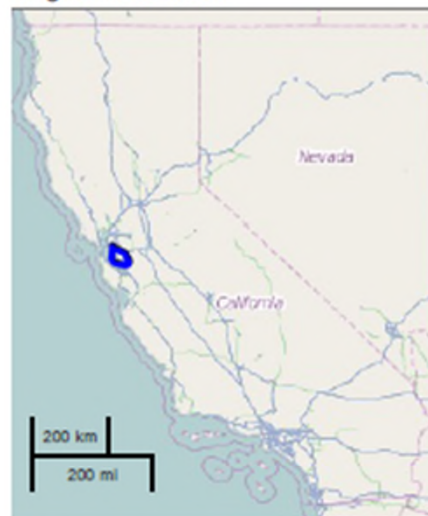
Percent of Area (estimated)

This Landscape Profile is a compilation of data and information relevant to management of natural resources -- especially streams, wetlands, and open water features. The summary includes aquatic resource extent, wetland condition (based on the California Rapid Assessment Method), wetland restoration activity, and land use and census information. Data are provided from multiple sources as documented on the [data](#) page of EcoAtlas. The summary has been generated based on your chosen area of interest.

Detailed location



Regional location



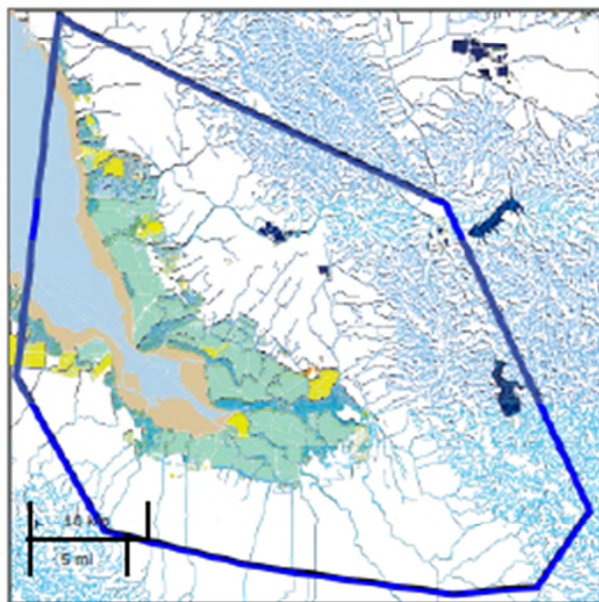
Basemap data provided by
© OpenStreetMap

Area of Interest:

- Generated by user-defined delineation
- Area: 249,972.2 acres / 390.58 sq miles
- Overlapping regions:
 - Ecoregion: Bay/Delta

California Aquatic Resource Inventory - Existing Aquatic Resources

The California Aquatic Resource Inventory (CARI) is a standardized statewide map of wetlands, streams, and riparian areas. CARI v0 is a compilation of multiple data sources to produce seamless coverage across the state. Datasets used in CARI v0 include the National Wetland Inventory (USFWS), National Hydrography Dataset (USGS), and regional intensified maps. The effort to stitch together a statewide dataset from multiple sources is largely a classification crosswalk exercise. Due to this there may be errors in classification of the features or boundaries of wetland extent in CARI v0. This is particularly an issue with depressional features or freshwater ponds and marshes. The CARI map is not intended for regulatory purposes and does not serve as a jurisdictional delineation. Efforts to correct both spatial accuracy and classification errors will be addressed in CARI v1. Please provide comments or corrections (including screen shot or lat/longs) to CARImapping@sfei.org.



CARI Summary Statistics

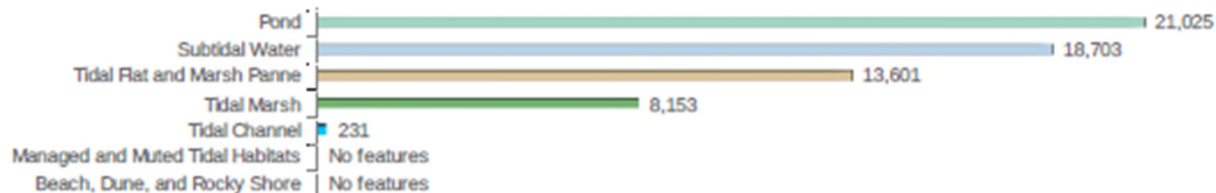
Total Area of Wetlands: 71,004 acres

- Estuarine and Marine: 61,708 acres
- Palustrine and Riverine: 9,296 acres

Total Length of Drainage Features: 1,657 miles

- Length of Fluvial Features: 1,132 miles
- Length of Tidal Features: 524 miles

Acres of Estuarine and Marine Wetlands



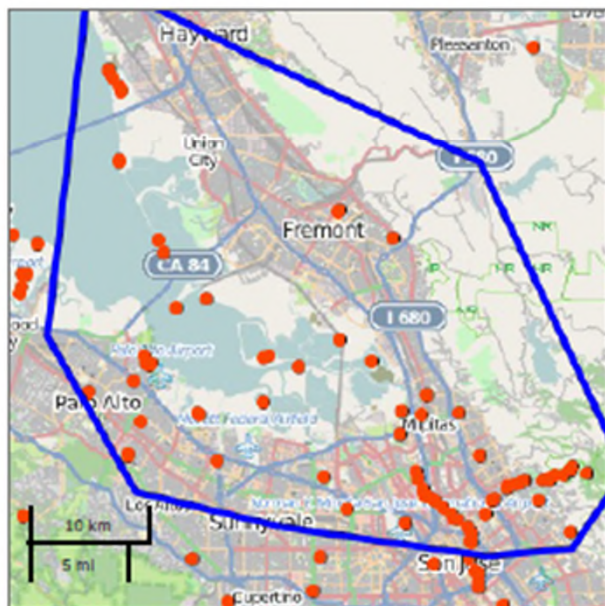
Acres of Palustrine and Riverine Wetlands



California Rapid Assessment Method for Wetlands

CRAM is a cost-effective and scientifically defensible rapid assessment method for monitoring the conditions of wetlands throughout California. It is designed for assessing ambient conditions within watersheds, regions, and throughout the State. It can also be used to assess the performance of compensatory mitigation projects and restoration projects. More information is available at cramwetlands.org.

Number of CRAM assessments in the profiled region: 80



CRAM Scores by Wetland Type

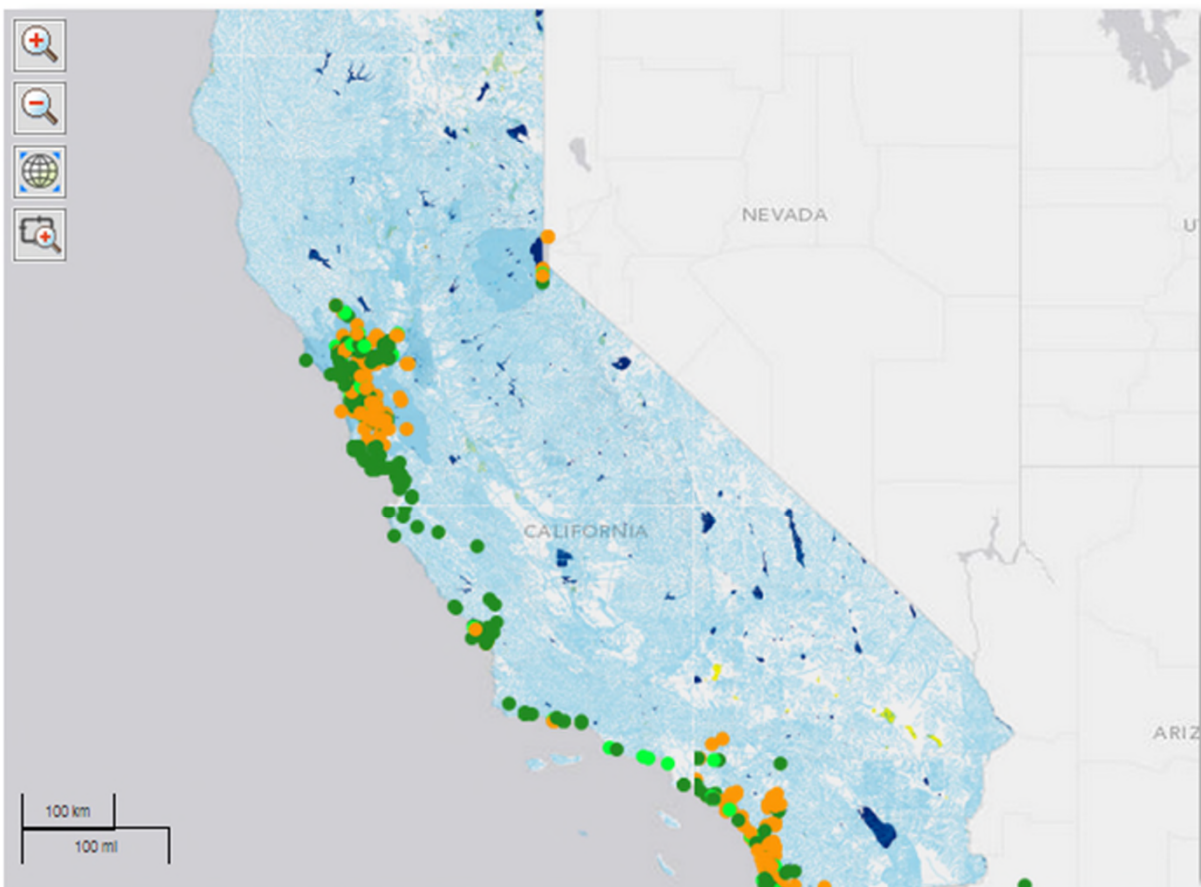
Wetland Type	Score	Min	Avg	Max
depressional (2)	Index	53	57	61
Buffer & Landscape Context		42	46	50
Hydrology		50	58	66
Biotic Structure		69	74	77
Physical Structure		50	50	50
estuarine (24)	Index	62	74	86
Buffer & Landscape Context		71	87	100
Hydrology		50	72	92
Biotic Structure		41	69	94
Physical Structure		38	67	100
riverine (54)	Index	36	65	85
Buffer & Landscape Context		25	64	100
Hydrology		36	67	83
Biotic Structure		30	70	94
Physical Structure		25	59	88

Most Recent CRAM Assessments in Profiled Region

See Appendix A at end of report for the complete list

Project Tracking Tools

- Categorized by ecoregion and Water Board
- Project information pages
- Mapped project polygon
- Files/links repository



Wetland Projects

Select a Project ▾

☐ Limit above list to projects currently visible in map window

Filter Wetland Projects by:

Site Status ▾

Project Type ▾

Project Region ▾

Clear

Download Wetland Projects Data ▴

[Central Coast](#) : [Map](#) | [Projects](#) | [Summaries](#)

Wetland Projects

Search for a wetland project

Project Name ▲	Status ◆	County ◆	Total Acres ◆
ALBA wetland restoration Monitoring Report Prepared Map Map	Construction completed	Monterey	39
Andrew Molera State Park Big Sur Riparian Restoration Map	Construction completed	Monterey	100
Ano Nuevo State Park Map	Construction completed	Santa Cruz	0.75
Arana Creek Restoration Project Plan or Permit Prepared Map Map	Construction completed	Santa Cruz	10
Arroyo Burro Estuary Monitoring Report Photo Plan or Permit Prepared Map Map	Construction completed	Santa Barbara	2.5
Arroyo Hondo Culvert Modification Project Monitoring Report Prepared Map Map	Construction completed	Santa Barbara	0.5
Bear Creek Canyon Road Association Storm-Proofing Map Other	Construction completed	Santa Cruz	5
Bear Gulch Watershed Upslope Erosion Management Plan Map Other	Construction completed	San Mateo	5

Hoffman Marsh Wetland Mitigation Project

[Basic Information](#)[Files & Links](#)[Project Map](#)

Status	Construction completed	County	Contra Costa
Project Type	Compensatory mitigation	Location	37.9013° N, -122.316° W Map
Project Area	6.0 acres		

Project Identification [?]

ID	Type
11-83	BCDC - Record Number
223280	USACE - File Number

Habitat Plan [?]

Habitat	Activity	Acres	Source
Estuarine wetlands	Enhanced	6.0	Map

Related Habitat Impacts [?]

Habitat	Acres Lost	Source
No Data		

Historical Habitats [?]

Habitat	Acres
Estuarine wetlands	6.0

Sites ⓘ

Name	Status	Acres
Highway 580 at Stege Creek mitigation	Construction completed	6.0

Events ⓘ

Date	Type	Description
2006-06	Project entered	Project entered into database
1996-08-21	Permit	USACE permit issued
1985	Groundwork end	On-the-ground work completed
1985	Report	Monitoring Report issued
1983-10-26	Permit	BCDC record number issued
1982	Report	Restoration Plan issued

People ⓘ

Type	Name	Organization
Contact	Sid Shadle	California Department of Transportation
Contact		San Luis Obispo County College District

Related CRAM Assessments ⓘ

Date	Site Name	Type	Score
7/31/2008	Hoffman #3	Estuarine Saline	56
3/31/2008	Hoffman #1	Estuarine Saline	67

Files & Links Repository

[ABOUT](#)[CONTACT](#)[DATA](#)[REGIONS ▾](#)

Hoffman Marsh Wetland Mitigation Project

[Basic Information](#)[Files & Links](#)[Project Map](#)[Upload files or links](#)

Name	File Type	Submitted On	Submitted By	Includes
Project Maps from ACOE Permit #223820	Plan Or Permit	10/28/2005	Max Delaney, San Francisco Estuary Institute	Map
 223280 maps.pdf				

[Bay/Delta](#) : [Map](#) | [Projects](#) | [Summaries](#)

Hoffman Marsh Wetland Mitigation Project

Add Files or Links

Add one or more files to this project to make the information available to others in the wetland restoration community. The files can be of any type: reports, photos, spreadsheets, or others. Alternatively, submit a web link (URL) to information already available elsewhere on the web.

Note: To add files, you must have cookies enabled on your browser. Fields in **bold** are required.

Step 1

Give the item you are uploading or linking to a short, descriptive title; choose the information type; and if desired, provide a detailed description or comment. This information will appear with your submission.

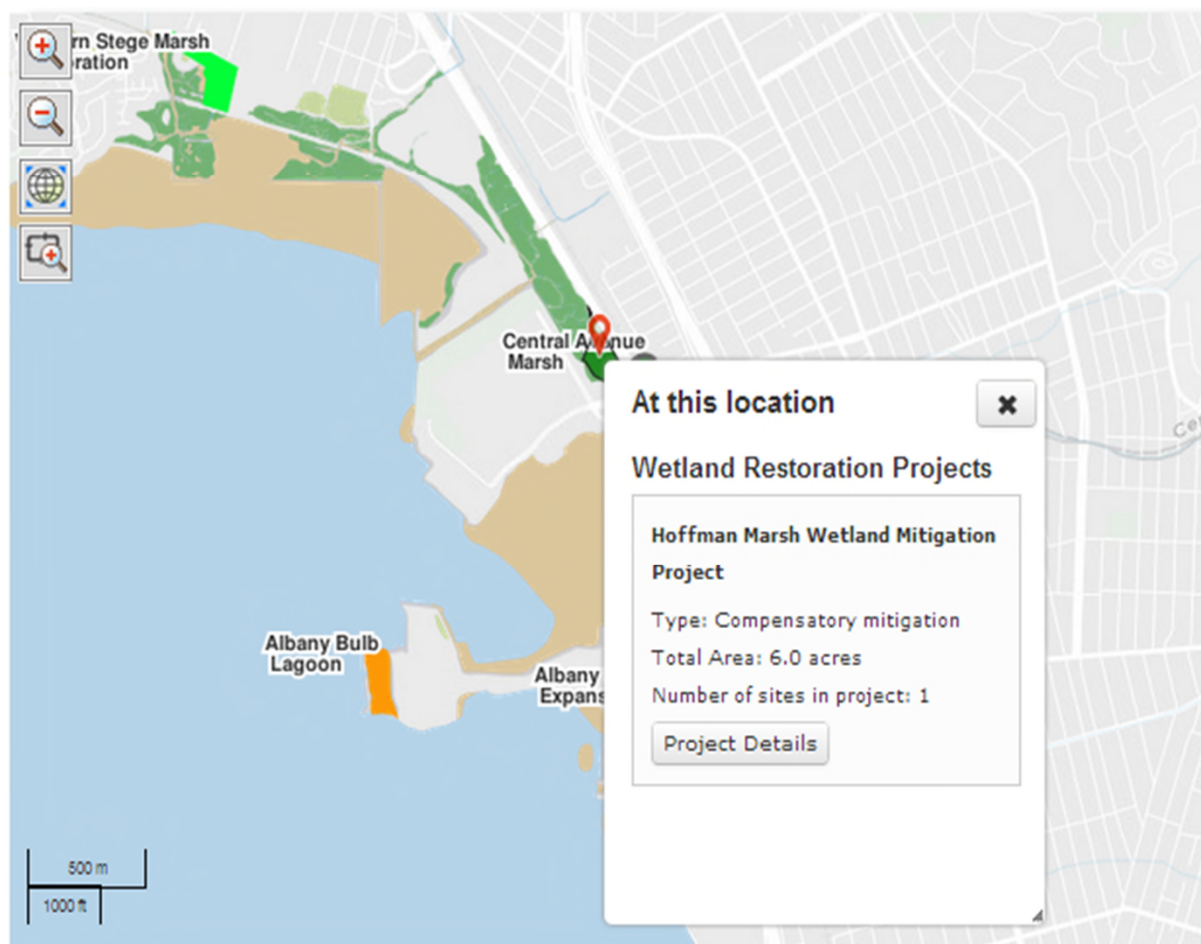
Title

Examples: "Final project report"; "Aerial photo of Pond 16"; "Link to 2008 mercury data"

Type☐ Monitoring Report ☐ Plan or Permit ☐ Dataset ☐ Photo ☐ Other

Includes ☐ Includes Map ☐ Includes Performance Criteria

Description/Comment



Wetland Projects

Select a Project ▾

☐ Limit above list to projects currently visible in map window

Filter Wetland Projects by:

Site Status ▾

Project Type ▾

Project Region ▾

Clear

Download Wetland Projects Data ▴

How can EcoAtlas support resource managers?

- Evaluate new projects within landscape context
- Compare historical and modern aquatic resources

How can EcoAtlas support resource managers?

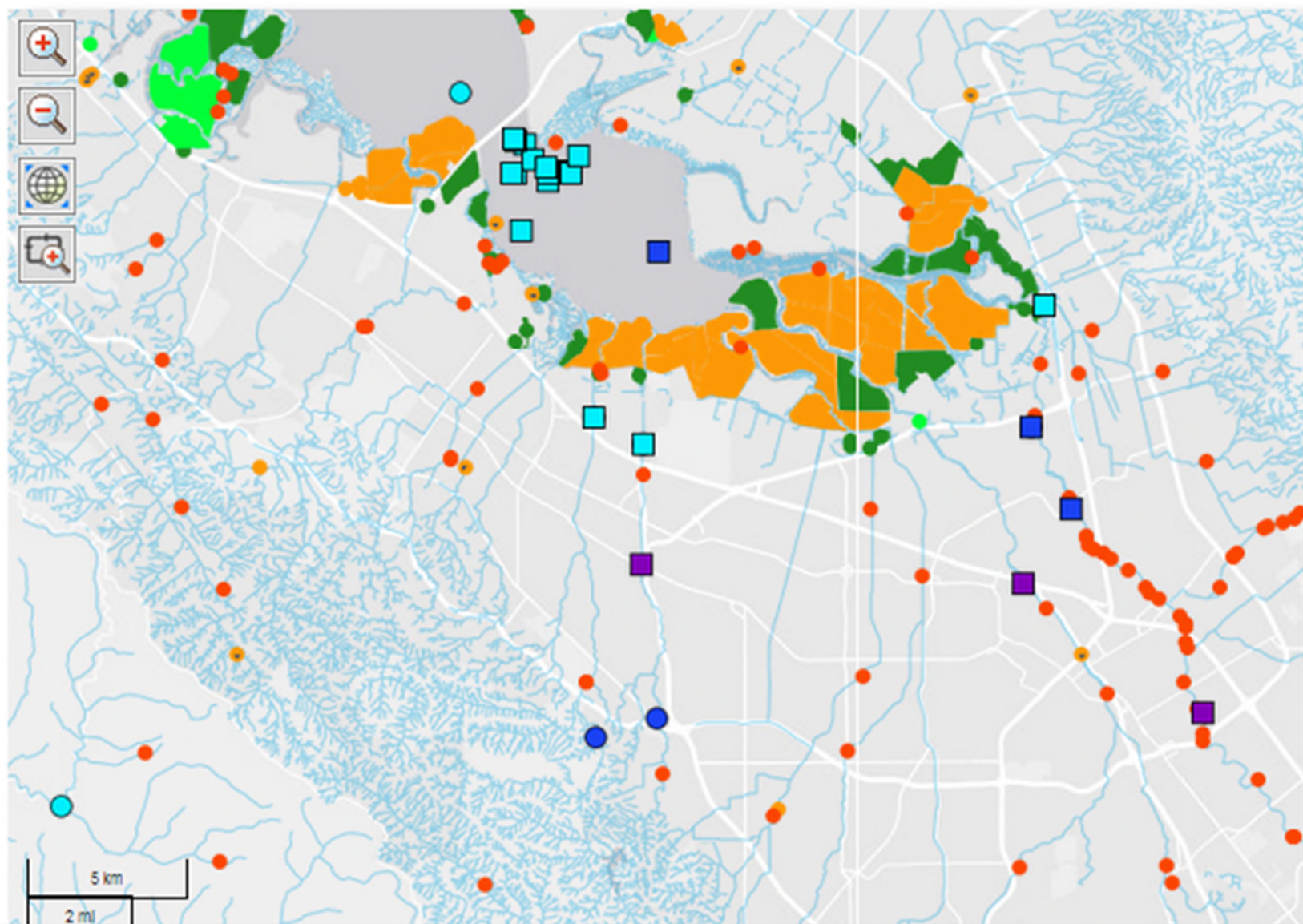
- Better coordinate restoration and monitoring efforts
- Provides geospatial, tabular and graphical documentation

Layers ▾

Legends ▾

Basemap ▾

Overlays ▾



Future Improvements

- Develop data entry tool for uploading new projects
- Add additional data layers (e.g. species abundance, water quality)
- Enhance Landscape Profile tool (e.g. upload polygons, share maps)
- Advanced project reporting

About EcoAtlas >

Tour EcoAtlas >

Content >

Functions >

Project Information >

Condition >

Habitat Maps >

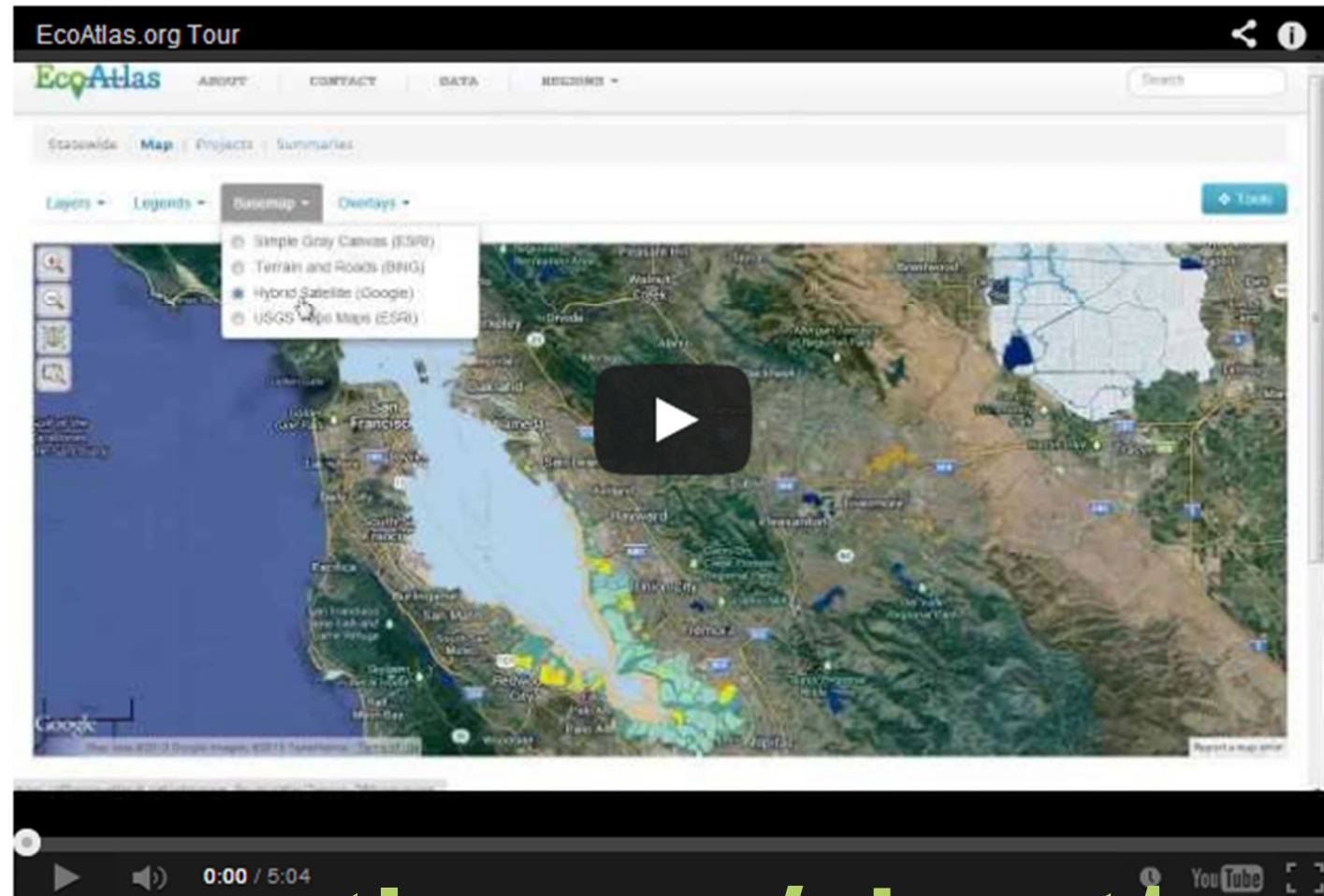
Future Development &
Feedback >

Credits >

Citation >

Tour EcoAtlas

We highlight for you some of the benefits and features of this exciting new tool during a brief, five-minute walk-through.



www.ecoatlas.org/about/

We welcome feedback on your experience using this site. How will you use the information? How could the site be improved? What else would you like to see? Was the site easy to use? Do you have suggestions on future improvements to the tool? If you have questions or suggestions, please use the form below or email us at ecoatlas@sfei.org

Name

Email

Phone Number

Reason

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Message

Questions?

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